LAW'S GROCER'S MANUAL

New Edition, Illustrated

A FULL DESCRIPTION
OF THE
TRADE IN ALL ITS BRANCHES

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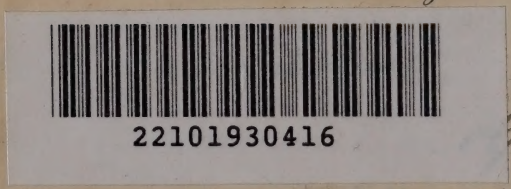
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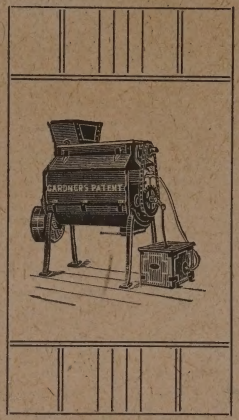

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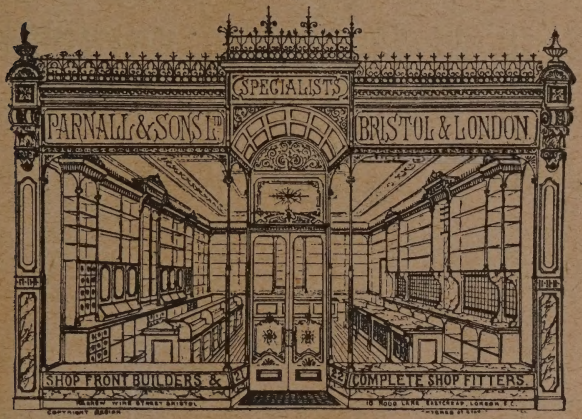

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LAW'S

GROCER'S MANUAL

A PRACTICAL GUIDE

FOR

TEA AND PROVISION DEALERS,
ITALIAN WAREHOUSEMEN, CHANDLERS,
DRYSALTERS, BAKERS,
CONFECTIONERS, FRUITERERS,
AND GENERAL STORE-KEEPERS.

COMPILED AND ARRANGED
BY

JAMES T. LAW.

SECOND EDITION.

Illustrated.

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PREFACE.

—:—

APOLOGIES for putting forth new books are not so fashionable now as in years gone by, although there probably never was a time when they might have been more reasonably expected than at present. For have we not a plethora of books on almost every conceivable subject?—and especially on foods, drinks, and other domestic accessories?

Numerous treatises have appeared on Tea, Coffee, Bread, Sugar, Oils, Fruits, Confectionery, &c.; we have Cyclopædias, Encyclopædias, Dictionaries, and such like, in ponderous tomes without number; trade journals, weekly and monthly, also abound, representative of every branch of business, and running up to hundreds of volumes! That most excellent London weekly, *The Grocer* (no relation or connection of the present Manual be it understood), has alone issued some *seventy* large half-yearly volumes, and deals most ably and exhaustively with well-nigh every interesting feature in the grocery trade as it crops up. Besides these we have shoals of Consular Reports, Magazine Articles, Booklets, and miscellaneous literature, constantly furnishing interesting details about British and Foreign commodities of all sorts.

It is, however, from this very multiplicity of books and other publications that the main trouble arises, for their great number, bulk, and costliness far exceed the resources of any ordinary shopkeeper; hence, for these reasons, coupled with want of time and opportunity, the knowledge they contain is practically inaccessible to the majority of retailers, shop assistants, apprentices, &c., especially when these persons are located in our smaller towns and villages. It may also be asserted that in no single book hitherto published will the grocer find any mention of half the articles he handles, while the facts he wants are generally so mixed up with matter he does *not* want, as to render any investigation very tedious and discouraging if not absolutely futile. Trades also so overlap each other, and colloquial terms applied to one and the same article in different districts are so numerous, that there is frequently much confusion; but the registration of

Trade Marks, Brands, and fancy names, such as *Albany Food, Bovril, Clarnicol, Cocoagene, Coraline, Cybil, Cytos, Easteleine, Eglah, Hovis, Izal, Kassama, Kleenitself, Komo, Lohsine, Malasso, Marol, Manhu, Mortadello, Oxyron, Ptyaloid, Pynka, Rubytine, Tripoline, Urbose, Vigoral, Viko, Virol, Vimos,* &c., has called forth so many meaningless titles that trade nomenclature threatens to become in the near future a positive VOLAPUK!

The Grocery trade is a very ancient one. History tells us that in the time of Edward III. a grocer was "a merchant who *engrossed* all vendable merchandise," certainly a more sweeping interpretation than the most enterprising storekeeper of to-day will lay claim to. But it is doubtful whether the vendable merchandise of that period numbered a tithe of the commodities which now swell the stock of a modern retailer. A multifarious array of household accessories and luxuries never dreamt of then, is constantly increasing, and like Tennyson's brook seems likely to "go on for ever!" Such are the considerations which suggested the following pages. It occurred to the compiler that without assuming any particular literary ability, his forty years' London and provincial connection with the trades referred to might enable him to sort out, classify, and bring into a single volume the most useful details as to the source, nature, history, composition, preparation, and exploitation of the raw products, manufactured and proprietary articles, trade appliances, &c., common to grocers, provision dealers, chandlers, fruiterers, bakers, confectioners, and general-shop keepers.

The incorporation of some hundreds of recipes likely to be of service, hints on business management and shopwork, along with tables, calculations, and other collateral information, have all helped to make up a book which, in the absence of any other work of the same sort, may be found in some degree worthy of its title. Its compilation has formed an agreeable occupation for three or four evenings weekly during the last half-dozen years. Perhaps it may be said that comparatively few shopkeepers ever trouble their heads about what things are made of, or where they come from; but such indifference will never pay, and is manifestly adverse to the best interests of both masters and men. The off-hand argument that "*our business is to sell and sell only*" cannot be altogether satisfactory to those who reflect that the recently invented Automatic machines may soon beat them at that! Possibly it is under such notions as the above that customers are so often served mechanically, without any thought or heed as to whether they may or not care to visit that shop again. But a trite old adage says:—"*Learn but little and work but little, and you may remain a drudge for ever.*"

Nothing attracts the interest of the consumer more than learning how an article is prepared; and the man who aspires to be something more than a mere shop machine, who determines to learn the most he can about his own trade, and thus be prepared to give intelligent and ready answers *when asked* as to the nature, composition, or origin of the goods he sells, will not only win the respect and confidence of both customers and employers, but will also be best qualified to select his own stock, so as to make the most profit and avoid the most losses.

Everything on earth is perishable, but most of the articles dealt in by the trades here referred to are peculiarly so, and often deteriorate very quickly, while very few improve by long keeping. Some are apt to ferment, lose flavour, colour, or other virtue, and so become stale and useless, others get soiled and spoilt for sale from improper treatment in handling or storage. It is no exaggeration to assert that many thousands of pounds worth of goods are lost or wasted yearly in retail shops from ignorant or careless management and other preventable causes within the art of efficient traders or assistants to avert, or at least to minimise to a fraction by combining a little original thought with a wide gleaning of known facts.

The system of packeting goods in small parcels with spicy titles, which has been coming more and more into vogue since 1856, when wholesale firms began grinding, has operated very unfortunately on the retailer. Not only has it undermined the probability of his ever obtaining any "goodwill" for a business to which he may have devoted the labours of a lifetime, but in conjunction with an ill-considered Adulteration Act it has exposed him to other costly perils, such as—(1) the cupidity of unscrupulous importers, manufacturers, and wholesale dealers; (2) the traps and trickeries of scheming inspectors; (3) the errors and quibbles of incompetent analysts; and (4) the idiosyncrasies or prejudices of different magistrates. It is notoriously a scandal to justice and legislature alike that there is scarcely a grocer in the country who has not been mulcted in fines or other expenses, and held up to ignominy through no fault of his own! Penalties for adulteration should admittedly be inflicted on guilty parties, but anyone at all acquainted with the inner workings of a retail concern knows that there is practically no adulteration there, nor indeed anywhere else on the *retailer's* behalf.

The old crusted stories about wooden nutmegs, turnip preserves, sanded sugar, hawthorn-leaf tea, &c., are probably too amusing ever to die out; but if glucose be, as no doubt it often is, substituted for sugar in honey, marmalades, &c.; rotten figs for jam; exhausted spices for genuine; ground walnut shells for cinnamon; powdered olive stones or fine earth for ground pepper; pellets of clay or coloured farina for peppercorns, coffee berries, &c.; perfumed glue or paraffin wax at 2d. per lb. for gum at 1s. per lb., and so forth; everyone, even magistrates should know perfectly well that it is not the retail shopkeeper who is the guilty counterfeiter, but the manufacturers with extensive plant, the importers or the wholesalers, who deal in hundredweights and tons, and among the more unscrupulous of which there is constant emulation as to who can discover, employ, and keep secret the cheapest substitute for any honest and wholesome ingredient hitherto used. The fabrication of the more costly products by *synthesis* has doubtless been found highly lucrative! Tests have, of course, been discovered by which many forms of adulteration may be determined with reasonable certainty, and most of these have been noted in this book; but unfortunately, sophisticators are no less expert and active. No sooner is a valuable test discovered than some way is found to circumvent it. Each firm knows remarkably well what it is selling and sending out, but the busy retailer is too frequently left in the dark as to what he is buying. He innocently sells it as received, trusting all is well, and only discovers the facts when hauled before the magistrates, ruthlessly fined, and often ruined!

Many Guides, Handbooks, Brochures, Pamphlets, &c., have been published under the auspices of manufacturers or others similarly interested; but, like quack advertisements, are generally unreliable, and only intended to make known the wonderful virtues of their own goods. Very rarely is any clear insight offered as to the composition or method of manufacture. Consumers are only expected to shut their eyes and open their mouth. Their is also a growing passion for anonymity not always due to excessive modesty. The labels on the goods, often without name and address, are frequently silent as to the real nature of the contents, or remarkably indefinite; while others are studiously misleading, if not absolutely fictitious both as to names and contents.

Of course the exact proportions of the various constituents can scarcely be expected, these secrets being fairly the property of the individual firms; but such general approximations as are common knowledge with each class of manufacturers should certainly not be withheld from the retailers.

Shopkeepers, like others, are also often misled by the letters of professional testimonial writers, analytical reports, exhibition medals, Royal patronage, &c., which are of doubtful value. The particular samples, even if competently examined and reported upon honestly, may have been specially prepared for the occasion, or may not even have been manufactured at all by the parties to whom they are attributed; and in very few cases is any certain proof offered that subsequent outputs approach the same standard.

In conclusion it may be that some of the articles described in the following pages are almost outside the trades named, but the contrast between the stock of a City Establishment and the ramifications of a Village Shop is very great, and, although both may claim to be "grocers," it might be difficult to decide which is the more orthodox.

An attempt has been made to give the names and addresses of a few special firms, which are not perhaps so widely known among retailers as they should be.

The Supplementary Index near the end of the book will be found useful in pointing to a few matters which have no distinctive heading; extra cross references being given wherever likely to prove useful.

All blame for errors, faulty composition, &c., must be laid to the compiler, and any praise must be credited to the various authorities from which the information has been gathered. The chief of these are enumerated on pages 18 and 19.

Much valuable help has been received from trade friends, commercial gentlemen, manufacturers, and others, to each of whom my sincere thanks are due, and are hereby cordially extended.

The liberal patronage of several advertising friends must also be acknowledged, without whose favours a work of this magnitude could not have been published at the price.

J. T. L.

Islington, Liverpool.

PREFACE TO THIS SECOND EDITION.

This new edition of the Grocer's Manual is but an extension and revision of the first. The original design has been so widely appreciated that I have simply kept on trying to improve it by jotting down and arranging plainly and briefly as possible the matters most likely to be of permanent interest and utility to busy retailers and their assistants.

Several generous readers have also favoured me with valuable information to the same end and I feel much indebted to every one of them.

The consequence is that the contents have been almost doubled and the price of the book has had to be slightly raised.

Nevertheless, I have every confidence that it will be found a profitable investment, rather than a mere expenditure, of the hard earned shillings of any of its purchasers.

J. T. Law.

Islington, Liverpool.

LIST OF THE PRINCIPAL WORKS FROM WHICH INFORMATION HAS BEEN GATHERED.

Allen's Commercial Organic Analysis.
American "Interstate Grocer."
Atkinson's Perfumes and their Preparation.
Bannister's Cantor Lectures.
Beasley's Druggist's Receipt Book.
Berliner Markthallen Zeitung.
Bevan's "British Manufacturing Industries,"
Blackie's Modern Cyclopædia.
Blyth's (Dr.) Foods, their Composition and Analysis.
Board of Trade Journal.
Board of Agriculture Journal.
Boulger's Book on the Uses of Plants.
Brannt's Fats and Oils, Vinegar, Fruit Preserves, &c.
Brannt and Wahl's Techno-Chemical Receipt Book.
British and Foreign Confectioner.
British Pharmacopœia.
Browne's Merchant's Handbook.
Burnett's (Dr.) Foods and Dietaries.
Cameron's Oils and Varnishes, Soaps and Candles.
Carpenter's Soaps, Candles, Lubricants and Glycerine.
Cassell's Domestic Dictionary.
Century Dictionary.
Chambers's Encyclopædia.
Champlin's Cyclopædia of Common Things.
Cheal's Fruit Culture.
Chemiker Zeitung.
Chemist and Druggist.
"Chicago Grocer."
Christy's New Commercial Plants and Drugs, 1887.
Churchill's Brewer, Distiller, and Wine Manufacturer.
Consuls' Reports (British and Foreign).
Cooley's Cyclopædia of Practical Receipts.
Crean's Fatty Foods and Condiments.
Crole's Tea Planting and Manufacture. (1897).
Crooke's Chemical Technology.
De Candolle's Origin on Cultivated Plants.
Encyclopædia Americana.
Encyclopædia Brittanica.
Ferguson's (A. and M. J.) Spice Cultivation.
Frankel's Treatise on Starch, Starch Sugar, and Dextrine.
Fruit Growers' Year Book.
Gadd's Soap Manufacture.
Gardner's Work on Acids, Vinegar, Ammonia and Alum.
"Grocer" and Grocer's Diary.
"Grocery World," (Philadelphia).
Health Exhibition Lectures.
Hogg's (Dr.) Fruit Manual.
Hutchinson's Food and Dietetics.
Imperial Institute Journal.
Johnson's Gardener's Dictionary.

JACKSON'S COMMERCIAL BOTANY OF THE 19TH CENTURY.
JACKSON'S VEGETABLE TECHNOLOGY.
JAMESON'S MANUFACTURERS' UP-TO-DATE RECEIPT BOOK.
KÖNIG'S (DR. J.) DIE MENSCHLICHEN NAHRUNGS U. GENUSSMITTEL.
LE MONDE ECONOMIQUE.
LEWIS'S TEA AND TEA BLENDING.
LOCK'S COFFEE CULTURE AND COMMERCE.
MANCHESTER HEALTH LECTURES.
MCCULLOCH'S COMMERCIAL DICTIONARY.
MERCHANTS' REVIEW.
MEW AND ASHTON'S DRINKS OF THE WORLD.
MULLHALL'S DICTIONARY OF STATISTICS.
NEW YORK CONFECTIONER.
NICHOLL'S TROPICAL AGRICULTURE.
OIL AND COLOURMAN'S JOURNAL.
PARIS GROCER—L'EPICIER.
PATENT MEDICINE JOURNAL.
PEARMAIN AND MOORE'S ANALYSIS OF FOOD AND DRUGS.
PHARMACEUTICAL JOURNAL.
PIESSE AND LUBIN'S ART OF PERFUMERY.
PORK BUTCHER'S GUIDE.
PORK TRADE MANUAL.
PORTER'S TROPICAL AGRICULTURALIST.
PRACTICAL CONFECTIONER.
READE'S TEA AND TEA DRINKING.
REDWOOD'S MINERAL OILS AND THEIR BYE-PRODUCTS.
SAWER'S PERFUMERY MATERIALS.
SIMMOND'S POPULAR BEVERAGES OF VARIOUS COUNTRIES.
SMITH'S (JOHN) DICTIONARY OF USEFUL PLANTS.
SOCIETY OF ARTS LECTURES.
SPON'S ENCYCLOPÆDIA OF INDUSTRIAL ARTS, MANUFACTURES, AND RAW COMMERCIAL PRODUCTS.
SPON'S WORKSHOP RECEIPTS.
STANDAGE'S PRACTICAL POLISH AND VARNISH MAKER.
SUGAR GROWING AND REFINING (SPON'S)
SUGAR TRADE JOURNAL.
SULZ'S BEVERAGES AND THEIR MANUFACTURE.
THUDICHUM AND PUPRE'S BOOK ON WINES.
TOMLINSON'S CYCLOPÆDIA OF USEFUL ARTS AND MANUFACTURES.
TROUSSART'S MICROBES, FERMENTS, AND MOULDS.
URE'S DICTIONARY OF ARTS AND MANUFACTURES.
VACHER'S FOOD INSPECTOR'S HANDBOOK.
WALSH'S (PHILADELPHIA) HISTORY OF TEA, COFFEE, &C.
WATT'S ART OF SOAP MAKING.
WATT'S DICTIONARY OF ECONOMIC PRODUCTS.
WELLS'S MODERN PRACTICAL BREAD BAKER.
WHITTINGHAM & CO.'S TEA CYCLOPÆDIA
WRIGHT'S FRUIT GROWER'S GUIDE.
WRIGHT'S (DR.) OILS, FATS, WAXES, SOAPS, CANDLES, &C.
YEATS'S NATURAL HISTORY OF COMMERCE.
YEATS'S RAW MATERIALS.
ZEITSCHRIFT FÜR UNTERSUCHUNG DER NAHRUNGS UND GENUSSMITTEL. (A GERMAN MONTHLY ON FOODS AND FOOD PRODUCTS).

HUGON'S "ATORA"

REFINED BEEF SUET

IS THE

Original and Best.

It is largely advertised and creates the demand.

Refuse all imitations now offered at lower prices.

It is rendered in our own works from selected Fresh English Beef Suet only, and nothing whatever is mixed with it, no chemicals are used and it is guaranteed absolutely pure.

TWELVE PRIZE MEDALS AWARDED.

TRADE MARK ON EVERY BOX.

ASK YOUR GROCER or PROVISION DEALER
HUGON'S
REFINED BEEF SUET
"ATORA" BRAND
SUPERSEDES RAW SUET, LARD and BUTTER.
For MINCEMEAT, PUDDINGS, CAKES, PIE CRUST and FRYING

TRADE MARK ON EVERY BOX.

Advertised Retail Price 8d. per lb.

It is indispensable in every household all the year round.

It supersedes Raw Suet, Lard, and Cooking Butter for Puddings, Cakes, Mince Meat, Pie Crust, Frying, and Cooking.

THE TRADE'S INTERESTS WELL LOOKED AFTER.

SOLE MANUFACTURERS:

HUGON & Co., Ltd., Pendleton, Manchester.

LAW'S GROCER'S MANUAL.

A

Abasas.— A second class quality of Portuguese wine, but considered light and wholesome when unadulterated.

Abbocati.— An Italian term for their sweet wines, such as Aleatico, Moscatello, Vino Santo, Vernaccia, etc., produced in the Roman States.

Abdelari.— An Egyptian fruit resembling the melon.

Abernethy Biscuits.—These do not take their name from the celebrated surgeon, but from the town of Abernethy, in Scotland.

The best are made of fine flour, milk, and a few caraway seeds.

Abernethy's Pills.—Each pill is said to contain two grains of blue pill and three grains of compound extract of colocynth.

Absinth.— F. *Absinthe;* Ger. *Wermuth;* Sp. *Ajenjo.*

Absinth or *Liqueur d'Absinthe* (pr. absant') is a strong and bitter spirituous liquor, of opaline-green colour, distilled in alcohol from the pounded leaves and flowering tops of a species of the wormwood plant, *Artemesia absinthium* and *Inula Helenium,* together with other herbs or chemicals to give the green colour and to render the taste more agreeable, such as angelica root, fennel, spinach, nettles, parsley, sweet-flag root, southern-wood, balm, caraway, star-anise, and hyssop; it is said to be coloured with turmeric, indigo, and sometimes with sulphate of copper. Absinth is tonic, stimulating, febrifuge, and vermifuge in its action, but bitterness is its principal merit; and it is primarily intended for use before meals as an aperitive.

It was originally invented and made at Couvet, in the Canton of Neufchatel, Switzerland, about 1740, and a quantity is still made there; but is now chiefly made by the same firm (Pernod & Son) in a larger establishment at Pontarlier, in France, by patent obtained from its first inventor, although there are numerous other makes, such as "*Absinthe Terminus,*" "*Absinthe Monopole,*" etc., etc., produced elsewhere, and particularly in the suburbs of Paris.

Absinth first became popular in France about 1830, as a febrifuge recommended to the soldiers during the Algerian war in the time of Louis Philippe; in Oran and Constantine fever made grievous havoc in the ranks of the army, and as the soldiers' usual drink was white wine, the doctors advised that absinth should be mixed with it as a preservative against miasmata, and in lieu of quinine, which latter was then very expensive. During the whole of the campaign the army drank this mixture, and even mixed the absinth with their brandy. Each regiment on returning to France brought with it the taste for absinth, and the habit soon became fashionable in Marseilles; then advanced and settled in Paris; it afterwards became the favourite drink of the country and of the French colonies.

Its use is now forbidden throughout the French army, although, as a fact, it is still consumed, both by officers and men, out of barracks, and it is only in the extreme north of France that absinth drinking is to any large extent eschewed. Some 2,000,000 gallons are still imported into that country, besides what is made there, and its effects are very injurious, its continued use producing a peculiar

morbid condition; indeed, its evil effects are soon apparent, utterly deranging the digestive system, weakening the frame, and, if persisted in, extreme nervousness, horrible dreams, and hallucinations follow, often ending in paralysis and death.

Some even attribute the French disasters in the German war to the indulgence of officers and men in this chronic poison.

The lamentable results of its immoderate use are, however, worst in Cayenne, New Caledonia, and Port Said, where it is drunk in excessive quantities and undiluted. In England the consumption has never been large, but it is increasing, particularly in London.

Absinth is generally sipped in water or spirits and water, the water being poured drop by drop on a piece of lump sugar held in a spoon over the glass containing the absinth. Sometimes the absinth is mixed with its own volume of *sirop de gomme*, the latter consisting of gum Arabic, sugar, and water, flavoured with orange essence. Confirmed habituees will not hesitate to drink it in iced water or in ordinary spirits and water. Its volatile oils are thrown out of solution and turn these mixtures quite white and cloudy.

The strength of most absinths is 72 per cent. of alcohol, but the cheaper kinds rarely exceed 50 per cent.

Absinthe Suisse is not made from the true absinth plant, but from other species of the same family, usually called "*Génépi*."

Abyssinian Coffee.—A kind of bastard Mocha, often called "East African," similar in appearance to the lower qualities of East Indian Plantation and Guatemala, and is generally classed as "fine ordinary" or "Long Berry Mocha." It is largely sent from Massowah to Aden, Djedda, and Alexandria for re-exportation, as the produce of Mocha. Coffee is indigenous to Abyssinia, and grows wild in many parts of that country. In fact, the whole country—mountain, valley, and plain—abounds in coffee, from the borders of Nara to the Nile, and forming the chief wood of the country. It is brought into Adis Ababba from various districts, but "Kaffa," in the south-east, whence coffee derived its name, is the most productive region. It is the parent plant of all the varieties found on the Red Sea littoral. The crop is very large, and a dollar will purchase 8lb. or 9lb. in the interior, the pound of coffee being calculated at the weight of 18 Maria Theresa dollars. Strange to say, very little coffee is consumed in Abyssinia. The berries are small, long, and narrow, hard and flinty in texture, but fairly even, with green tinge and a few pale berries, but they roast well, and give a fairly good liquor, and, though not of first-rate quality, possess a special aroma.

Abyssinian Tea.—Also known as *Kaat* or *Kat*, and obtained in Abyssinia from the dried leaves of the plant *Catha spinosa*, which are stimulant, anti-soporific, and anti-narcotic. Used by the Arabs to produce wakefulness.

Acacia Gums.—See *Arabic Gum*.

Acajou Nuts.—See *Cashew Nuts*.

Acetate of Copper.—See *Verdigris*.

Acetic Acid.—(See also *Acid Vinegar*.)—F. *Acide acetique*; Ger. *Essigsäuren*; It. and Sp. *Acido acetico*; Lat. *Acidum aceticum*.

A thin, colourless liquid like water, but with an intensely strong and sharp acid odour and sour taste, almost suffocating when placed under the nose, and with a highly inflammable vapour. It is this kind of acid which forms the basis or sourness of vinegars, and, in fact, the only ingredient of hygienic value in them. It is composed of two atoms of carbon, four of hydrogen, and two of oxygen, and when pure it is very corrosive.

The modern product is obtained from one of several sources; from wood, from acetate of soda, or from fruits, vegetables, spoilt wines, alcohol, etc.

That obtained from wood is called pyroligneous acid, wood acid, or wood spirit, and the process is technically described as "the destructive distillation of wood." For example, a pound of wood (oak or beech is best) chips, sawdust, or spent dye-wood, burnt to a red heat in a large cylinder to which a worm or condenser is attached, is quickly changed into some four ounces of charcoal and seven ounces of sour tarry liquid. This charcoal is of the best quality, and mostly used in making gunpowder, while the crude liquid is afterwards freed from methylic alcohol, oleaginous and tarry matter and its other impurities, by lime and soda, when it becomes acetate of soda. The acetate of soda is then distilled with vitriol and made into acetic acid, clear as water. This sort of acetic acid is considered the best for preserving animal and vegetable substances on account of the traces of essential oils, creosote, and other hydrocarbons which it contains, and which increase its antiseptic properties as an antiputrescent. Its value depends on its strength, freedom from tarry odour, and general purity.

Acetic acid has also long been obtained from the oxidation of fruits, spoilt wines, etc., especially on the Continent; also from malt liquors, sour ales, cider, and other fruit juices in this country; the necessary vinous fermentation being effected by the vegetable organism called the *mycoderma aceti*, the liquids merely undergoing a slow exposure to the open air at a temperature of 80° to 100° F.

In Pereira's "Materia Medica" it is stated that "the acetic acid of commerce is derived from two sources—vinegar and pyroligneous acid; the first is procured by exciting the acetous fermentation in certain liquids, the other by the distillation of wood."

Much confusion exists among traders regarding the strength of acetic acid when merely called by this name; its real value depending almost entirely on its strength or density, which vary very considerably. The commercial fluid may be tested by Twaddell's acetometer, but a more reliable method is to neutralise it by some standard caustic alkaline solution.

Strength and present prices:—

Per cent.	*Spec. Grav.*	*Per cwt.*
28 ...	1.040 ...	10/0
33 ...	1.044 ...	12/0
40 ...	1.051 ...	14/0
60 ...	1.067 ...	21/0
70 ...	1.070 ...	24/0
80 ...	1.073 ...	27/0
90 ...	1.068 ...	30/6
98/100 ...	1.0675 ...	33/6

and intermediate strengths in proportion. 85 to 100 per cent. strength is known as "glacial" (free from water), and runs from 40/- to 100/-, according to degrees of purity.

The British Pharmacopœia states that glacial acetic acid should contain nearly 99 per cent. of pure acid—$H(C_2H_3O_2)$; that liquid acetic acid should contain 33 per cent. of glacial acid, or 1 part of glacial acetic acid and 2 parts water (both by weight), as "ordinary acetic acid"; and "*diluted acetic acid*" 4.27 of real acid, neither more or less.

Much of that sold as B.P. acetic acid is not nearly either B.P. strength or B.P. purity. As a rule, it is oftener under 30 per cent. than over it.

The strongest vinegar usually contains 5 to 6 per cent. of real acid, and the weakest, say No. 16, about 3 per cent.

In many cases it is advantageous for dealers to buy a high strength of chemically pure acid, say 85 per cent., and then to dilute it with water to the exact strength required.

Pure acetic acid at 12° F. becomes a solid mass; at 118° it boils; and at 15° it is glacial or crystalline, forming colourless crystals of prismatic or tabular form.

Apply to C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Acetic Ether.—A compound of acetic acid and ether, with an odour like apples, obtained by distilling alcohol and oil of vitriol with acetate of potash. It is used as a flavouring for various wines.

Achia or **Achiar** (ak'-yar) — F. *Achard* or *Achar*.

An East Indian name for the pickled shoots of the young bamboo, *Bambusa arundinacea*. The tender stalks are first cut into short lengths and then split, put into spiced vinegar, and filled into earthenware jars. It is known to the English as PICKLED BAMBOO, and forms a yellow pickle not unlike cucumbers cut in long slices.

The term Achard or Achar is used in Malay and in some parts of France for other mixed pickles, containing peppers, gherkins, young melons, oranges, and citrons, corianders, etc. The bamboo shoots are often imported into Holland from the Eastern Archipelago.

Achira. — A species of the Canna plant, which has large roots, and yields a rich, starchy powder, like arrowroot.

Acids. — Of the endless number of acids in commerce, the sorts which interest grocers, etc., are :—Acetic Acid, Boracic Acid, Carbolic Acid, Citric Acid, Malic Acid, Nitric Acid, Oxalic Acid, Pyroligneous Acid, Salicylic Acid, Sulphuric Acid, Tartaric Acid; and these will be found referred to in their alphabetical order. For prices, etc., apply to C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Acid Drops or **Acidulated Drops.**—A popular kind of boiled sugar-sweets, varying in value according to the quality of sugar employed, the amount of tartaric acid, and skill in boiling. A good quality may be made from 1 cwt. white cane sugar and 3lbs. tartaric acid, flavoured with a little essence of lemon and citron. (See *Boiled Sugars*.)

Acid Vinegar. —(See also *Vinegar, Pyroligneous Acid, etc.*)

A spurious sort of vinegar which, until these last few years, has been of large sale. It usually consists of one part of ordinary commercial acetic acid and five to ten parts of cold water mixed together, and then coloured with caramel or burnt sugar to the shade of vinegar required.

Some analysts say that such unfermented vinegar is not necessarily injurious, but merely inferior in quality; other scientific gentlemen think otherwise.

Sulphur acid is, of course, very injurious, and its use rigorously prohibited.

Dr. Ure, in his famous and ever-reliable "Dictionary of Manufacture," says :—"It is a remarkable fact that the people of this country have had their vinegar palate so depraved that they prefer the vitriolised vinegar to the pure, and that all attempts at introducing a better article into general sale have proved abortive—a fact discreditable to our nation."

Another writer says :—"I have before me the analysis of several samples of vinegar bought from the largest and best-known houses in London, which contain from 1.27 to 3.16 parts of *dry sulphuric acid* in every 1,000 parts of vinegar."

Some assert that a certain quantity of that most corrosive acid is necessary to prevent the "mothering" of the vinegar, and quote the permission granted to manufacturers by the Excise, when it was a duty-paying article, to mix sulphuric acid not exceeding .001; but it is argued that even this homœopathic dose is really not necessary for that purpose, and that the real reason is that the burnt taste of the acetic, or rather the pyroligneous acid, must be killed by the oil of vitriol. The detection of the sulphuric acid by the most unscientific is a very simple chemical experiment. Get a small test-tube from any dealer in apparatus, into which pour some of the vinegar you are about to buy; add to it a few drops of nitrate of baryta, also easily procurable, and if the liquid remains quite undisturbed and clear then, if it otherwise suits, you may safely buy and sell it as free from sulphuric acid.

It is certain that most of the pickles sold are preserved in acetic acid vinegar, it being made at only about half the cost of malt vinegar, but when sold, acid vinegar must be specially declared as such, and must not be supplied when "*malt* vinegar" or, perhaps, even

"*vinegar*" is asked for. Magistrates differ as regards the latter point.

Acidulated Kali.—See *Sherbet* and *Lemon Kali.*

Acidulous Waters.—A term denoting mineral waters which contain free acids in solution.

Acorns.—Du. *Akors;* F. *Glands;* Ger. *Eicheln;* It. *Ghiande;* Rus. *Schedudii;* Sp. *Bellotas.*

The fruit or seed of the oak tree. Pigs are particularly fond of them, and it is chiefly to acorn-feeding that Westphalian Hams and Bologna Sausages owe their celebrity.

A substitute for coffee has also been prepared from acorns.

Wholesale herbalists quote: Peeled Acorns, 9/- cwt.; Burnt, 16/6; Burnt and Powdered as Coffee, 20/-.

Acqua d'Oro.—(See also *Gold water.*)—A renowned Italian liqueur said to be the oldest of the very sweet kinds.

It was first taken from Italy into France in 1533 by Catherine de Medici, and got its name from the fact that the makers put powdered gold leaf in it.

Adam's Apples.—See *Forbidden Fruit* and *Plantains.*

Adams' *Extract* of HERBS.—See *Extracts.*

Adelantadillo.—A Spanish name for the first red wine drawn from the ripe grapes.

Adobado.—The Spanish name for *Pickled Pork.*

Adulteration.—See *Food and Drug Acts* at end of book.

Aerated Beverages.—(See also *Mineral Waters and Temperance Drinks.*)—F. *Eaux gazeuses;* Ger. *Brause Wasser, Gashaltige Wasser;* It. *Acque Gazose;* Sp. *Aguas gaseosas.*

These embrace a variety of acidulous and alkaline drinks, which have been artificially impregnated with carbonic acid gas or oxygen, and thus rendered sparkling or effervescent.

The consumption is very great in hot seasons, and particularly in hot countries. The whole host of these beverages—Soda Water, Seltzer or Selters, Lithia, Carrara, Potash, and other waters, as well as the popular Lemonades, Ginger Ales, etc.—are all made practically on the same basis—that discovered by Mr. Thomas Henry, a Manchester chemist, about a hundred years ago. The making of an aerated water which merely pops and fizzes is not a difficult matter, being merely plain water charged with carbonic acid gas; and the manufacture is often carried on by those who know little of the chemical and physical principles involved, but the production of a really high-class article is not quite so easy. Carbonic acid is first necessary, and this is made in a "generator," either from whiting or carbonate of lime, or, better still, a new and cheaper bicarbonate of soda specially made for the purpose, with the action of sulphuric acid, and then stored in a gasometer.

1 cwt. of whiting, 36 gallons of water, and 6¼ gallons (1cwt.) of sulphuric acid make a fair gas, but it has an offensive smell and yields a muddy deposit (calcium sulphate); while 1 cwt. bicarbonate of soda, with 18 and 19 gallons of water and 3¾ gallons (68lb.) sulphuric acid, of 167 Twaddell strength, produces a clear liquid, free from odour, and instead of a useless sediment, a saleable by-product (glauber salts) is obtained. Ordinary water is next impregnated with this carbonic acid gas to about seven times its own bulk, by means of a force pump in a strong copper cylinder, until a pressure of 100lb. per square inch is obtained, when it is considered ready for bottling. Or, water may be thoroughly saturated with carbonic acid by generating the gas in the waters themselves. In either case, about a teaspoonful of fruit essence, syrup, or one of the tonic, stomachic, or phosphoric salts above named, is first put into the empty bottle, which is then filled up with the carbonated water and tightly corked.

Machines are specially made for filling the bottles, siphons, etc., and full instructions are usually given with them.

On uncorking the bottle the imprisoned gas is released, and either escapes or is taken into the stomach in the form of bubbles.

In Soda, Potash, Magnesia, Carrara, and Lithia, the ingredients are apportioned according to the dose recommended by the leading doctors.

A larger amount of gas is usually inserted into soda and potash waters, so as to reduce the temperature of these liquids and enhance their pungency and sparkling qualities.

Sweet beverages, such as Lemonade, Sarsaparilla, Ginger Ale, Orangeade, Champagne Cider, Ginger Beer, etc., are all intended to retain the delicate bouquet of the fresh fruits and spices indicated by their respective names.

For Ginger Ale, or Gingerade, a small quantity of ginger or capsicum extract and sugar is placed in the bottles previous to their being filled up with the aerated water. For Lemonade, essence of lemon, citric acid, and sugar are used.

Most manufacturers mix the water and flavouring matter first, before inserting the carbonic gas. Either way does equally well; the whole cost is very trifling, and it is said a syrup of 14lb. of sugar, 2½oz. of tartaric acid, 3½oz. of citric acid, and 4½ drachms of essence of lemon, dissolved in 2½ gallons of water, will suffice for 30 dozen bottles of lemonade of excellent quality, and that a dexterous bottler can fill and cork them in about forty-five minutes; in fact, the whole process is very rapidly performed by the aid of modern machinery and with a minimum of manual labour. (See also "*Gazogenes.*")

Most of the drinks known as soda-water are merely aerated (carbonated) water, and contain no soda at all; in fact, the public seem to prefer it so, the taste of carbonate of soda not being very agreeable; but the best makers invariably use a little carbonate of soda, and the letter of the law requires it. A well-known effervescing draught is made from bicarbonate of soda and tartaric acid. Carbonic acid always mixes readily in water, the latter absorbing generally about its own volume of gas, hence such beverages do not give off all their gas at once.

If a piece of cork be dropped into a tumbler of lemonade, further effervescence follows, and more gas escapes. Agitation also favours the disengagement of the gas, so that narrow siphons cause more effervescence and froth than the widest bottle necks themselves occasion.

The varying solubility of carbonic acid at different temperatures and pressures explains why siphons and bottles which have been kept in a cold place appear to be "flat," or deficient in gas, when in reality the gas is only kept in solution by the low temperature of the water. It is important that no leaden pipes or other vessels or appliances be allowed to come in contact with these aerated liquids, which readily dissolve lead and have often caused lead-poisoning. Ginger-beer, barm-beer, lemonade, champagne, and other carbonated beverages in which the carbonic acid gas is produced by the natural process of fermentation, are not called aerated but "home-made" beverages or *non-alcoholic brewed beers*, and it must be acknowledged these latter are gaining on the public taste every year, the principal reason being that the objectionable "cloy," hitherto inseparable from aerated waters is absent.

The numerous and valuable waters obtained from natural springs all over the world are usually distinguished as "Natural mineral waters," and aerated waters are merely intended as reproductions or imitations, containing two or three of the substances which are present in largest proportion in the "Natural" waters themselves. To make really good drinks three things are absolutely necessary—pure water, pure ingredients, and well-constructed, suitable apparatus.

Aerated beverages to be consumed on the premises can be sold after 10 p.m. only by parties holding refreshment licences.

It has been stated that there are 30,000 persons employed washing, labeling, filling, and corking, in the London mineral water factories, one firm alone

producing in the summer season no less than three million bottles of these beverages weekly.

Traders should be very careful not to re-fill bottles or syphons bearing other makers' names or trade-marks, this being an offence heavily finable.

"*Camwal*" *Brand*.—The letters "CAMWAL" are simply the initials for Chemists' Aerated Mineral Water Association, Limited.

Aerated Bread.—Bread baked from dough made of flour, water, and salt, without barm, yeast, or any saline matter, but with carbonic acid gas, or carbonic dioxide, mechanically introduced in the form of carbonic acid water, similar to "soda-water."

The kneading—if kneading it can justly be termed—of the water and flour into dough was originally carried on in a special vessel close and strong, so as to maintain the pressure of the carbonic acid gas. When the dough was sufficiently kneaded, it was removed from the close vessel and put into the oven, where it would, of course, expand and rise at once, and thus be baked. The above was Dr. Dauglish's ingenious method as first carried out, but it has been much altered, and the subjoined is the usual mode now followed:—First of all a rather weak wort is produced by working the malt and flour. This mixture is left to ferment, and in due course, owing to the *bacteria*, it sours. Now the water that is to be aerated is mixed with some of this weak acid liquid. It will then be found to readily take up the carbon dioxide gas. The acid, besides, renders the gluten more soft. The resultant aerated bread tastes, it must be confessed, to those who can distinguish well the difference between the various kinds of bread, as somewhat raw, and we need not wonder at this when we bear in mind that there is, unfortunately, in this form of the staff of life, none of that invaluable peptonisation of the albumenoides which result naturally from the process of the ordinary fermentative process. We understand that it was to supply this defect, and to meet the want for a bread that should not taste so crude, that the idea came into operation of adding the fermented wort as a part of the process. There are, we confess, however, some compensative points to allege on behalf of aerated bread. The flours used are both weak and damp and far from excellent, but still it is by this plan practicable to produce thence a form of bread that may still be fairly wholesome and palatable.

It is claimed for this system that it is cleaner, requires no handling; flour is saved, time is saved, the bread being prepared and baked in half an hour, instead of six or eight, and that the bread is pure and more palatable.

The gas is made in the same way as it is made for manufacturers of aerated waters. Five cubic feet of the gas are required to charge 35 gallons of water for every two sacks of flour.

Bakers who have not the mechanical appliances for making proper aerated bread as above sometimes imitate it as follows:—For every pound of Hungarian flour they use a gill of aerated water (brisk as possible), and salt at the rate of 2oz. to the stone. They empty the water into a basin, throw flour upon it, then mix, keeping in as much gas as they can, and in a few minutes put it into the oven.

For small quantities, divide 3lb. flour into two portions; mix up the first with water in which 2oz. bicarb soda has been dissolved. Then mix the remainder of the flour with water to which 1oz. muriatic acid has been added. Knead each of these doughs thoroughly, and then mix both portions together as thoroughly and rapidly as possible; form into loaves, and bake at once.

2. Use a baking powder, composed of 5 parts of Powdered Cream of Tartar, 2½ parts of Bicarb of Soda, and 1 part of flour; all well dried and thoroughly mixed.

These non-fermented breads require well baking, so as to prevent the formation of mouldiness.

They all have a more or less limey taste, arising from the lime employed in the manufacture of the carbonic acid.

Doctors often recommend aerated bread to patients suffering from wind and acid eructations, because fully fermented bread tends to aggravate these disorders, although this latter is much more digestible.

Aerated Flour.—Coomb's Eureka Self Raising Flour undoubtedly commends itself to every lady who prizes herself on her pastry; it being next to impossible to get any other than best results with this flour. It is uniform in quality and blended with scientific knowledge of the various constituents of wheat and flour. It being self-raising also is an additional reason why your results will be perfect. Your pastry will be the admiration of your friends, and, therefore, a perpetual source of satisfaction and gratification to yourself. By its use you will stave off the arch-fiend, indigestion; and there will be no discomfort after eating pastry made from this flour.

It is an admitted antidote for indigestion, and in quality and sheer merit is a long way ahead of all competitors. This is evidenced by the numerous awards, no less than 15 Gold Medals having been secured by this flour.

The leading English, French, and German *Chefs* speak highly of it, and all who know its intrinsic value are determined adherents of this Brand. Sold in 3d., 6d., 1/-, 2/6 bags. Apply to—Coomb's Eureka Flour Co., Ltd., Lenton Boulevard, Nottingham, and 8A Farringdon Road, London, E.C.

Aerated Waters.—See *Aerated Beverages.*

African Coffees.—These are divided into East and West Coast; the former comprising Abyssinian, Bourbon, Egyptian, Mauritius, Madagascar, Mozambique, Nubian, and Zanzibar; the latter including Angola, Benguelan, Congo, Liberian, Loango, and Natal. Each variety is described in its alphabetical order elsewhere.

Africa is the original home of coffee, and trees are to be found scattered throughout that "dark continent," but its cultivation so far is comparatively trifling.

African Lard.—A rich and beautiful hard butter obtained from the nut of the *elais guineensis*, a native tree on the coast of Guinea.

For cooking purposes it excels the finest ordinary lard.

Agar-agar.—A Malay name for the well-known gum obtained from *Escheuma spinosum*, etc., and which also includes several other yellow gelatinous and edible sea-weeds, common to the coasts of the Archipelago, such as *Ceylon Moss, Java Seaweed, Bengal* or *Japanese Isinglass, Australian Algæ* etc. The fucus is now generally referred to the *Sphærococcus spinosus*, and *gracilaria* of Agardt. The best qualities are used in cookery, after being boiled in water until well dissolved, and then simmered into a jelly transparent as water, and finally dried in the form of thin sheets; but they are not so easily dissolved by heat as ordinary gelatine. The inferior kinds resembling Irish and Iceland Moss are largely used in preparing paste for microscopic fungi, and as a coating for paper in making native lanthorns.

Agar-agar is also used as an ingredient in making size for silk manufacturers. It is generally seen in thick yellowish-white pieces about an inch wide and a foot long, and sometimes in white transparent threads, thick as a straw, and about two feet long. It is usually imported in bales of 200lb., mostly from Singapore, and sold retail at 2/- to 4/6 per lb.

Being full of cavities, the best Agar-agar is extremely light, and quite tasteless. It swells out very much in water, and on heating forms a jelly-like food for invalids, and will keep good for a longer time than other jellies. 1oz. will make 5 to 10 pints.

The natives in India prefer Agar-agar in place of Isinglass, to which, being an animal substance, they have religious objections. Apply to M. E. Holdsworth, 3 Norfolk Street, Bradford.

Agaves. — A genus of plants not unlike aloes, with which they are often confounded. Agaves are native of

Central America and Mexico, but have also been naturalised in Europe. (See *Pulque*.)

Agi or **Aji.**—Names for the Guinea or Red Indian dwarf bird-pepper, a species of capsicum, grown in Peru; also a sort of sauce made from it in America.

Aipi.—A Brazilian edible root from which a beverage is also extracted.

Aizen.—A liquor prepared from cows' milk in Tartary.

Akee.—A kind of fruit (*Cupania sapida*) native of Guinea, but now grown extensively in the West Indies and South America, and quite distinct from the New Zealand shrub *Aki*. The tree grows 20 to 30 feet high, with white flowers, from which a native cosmetic is made. The fruit is of a reddish-yellow colour, a little larger than a hen's egg, is divided into three lobes or cells, has an agreeable sub-acid flavour, and is very delicious. It is considered beneficial in cases of diarrhœa, and is very popular in Africa.

Albacete.—A Spanish wine of medium quality made in New Castile.

Albo-carbon.—A solid residuum of creosote. An "*albo-carbon light*" is a light produced by carburetting ordinary gas by the volatilisation of albo-carbon, which is prepared in a fluted form and placed in cylindrical chambers about the gas-burner.

Albumen.— The purest albumen is found to the extent of about 12 per cent. in the white of eggs, and may be prepared for use by dissolving in cold water, and then beating to a froth. A considerable quantity of "egg white" is manufactured in Russia and Germany.

It is also prepared in China. At Hankow there are three large European firms—one Austrian and two German—engaged in the business. Immense numbers of eggs are used, and as they must be fresh, the season is restricted to two periods of about two months each year.

A large amount of egg albumen is now made by a German firm at Wuhu, near Chinkiang, in Eastern China, where duck eggs are very cheap and plentiful. As soon as the eggs are received at the factory, they are tested by a very simple but ingenious process. They are held in pairs in front of a circular opening in a tin cylinder open at the top, containing a lamp giving a powerful light, which is concentrated on the opening. Each speck or flaw in the egg is distinctly seen in the process, and all the eggs showing the slightest defect are at once rejected. The percentage of rejected is remarkably small, rarely amounting to 50 per 1,000. The good eggs are sent to the room prepared to receive them, where a number of Chinese girls are employed to break and separate the yolk from the white, placing each into separate vessels. The white then undergoes one or two processes. It is either carefully cleansed of all stray bits of yolk, and then put through a course of stirring in a large vessel, by means of a large heavy rod or paddle worked by hand, when it is ready for the drying-room, or, after being cleaned, it is run into large vats and allowed to ferment, the process of fermentation being accelerated by the admixture of certain chemicals, which chemicals are held by the firm as a secret. When it is found in drawing off that all the impurities have either been deposited or thrown off in the form of a thick froth, and the resulting liquid is albumen, as clear as water, the albumen is ready for the final process of drying. This is performed in a series of three rooms, each hotter than the last, the temperature ranging from 40° to 50° Centigrade.

The albumen is run into shallow tin pans about 1 foot square, which are placed in ranges of shelves in the drying rooms. Frequent examinations are made to see the temperature is maintained, and that the process of drying is sufficiently gradual, uniform, and complete. A period of sixty to seventy hours usually suffices. When thoroughly dry the albumen, which now presents the appearance of isinglass, with a yellow tinge, is, after cooling, placed in large square packing cases lined with tin, holding

about 400lb. each, and is ready for shipping.

Albumen is largely used by confectioners as a glaze for pastry goods, and to clarify wines, sugars, coffee, syrups, etc., but its principal use is in the preparation of fast dyes for superior kinds of cotton goods, prints, etc., also in photography.

Seven hundred eggs will yield about 10lb. of albumen and from 50lb. to 60lb. of yolk.

Albumen occurs also in the sap or juice of many plants, fruits, and vegetables, such as peas, turnips, cabbages, potatoes, etc.

About 1,000 tons come to this country yearly; formerly there was a demand for dried albumen at 5/- to 7/- per lb., but it has decreased since the introduction of aniline dyes, and now only fetches 1/- to 3/- per lb.

For prices, etc., write to C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Alcarnose.—A German extract of meat, which is put up in egg-shaped capsules, one of which dissolved in a cup of hot water makes a cup of *Bouillon*.

Alcohol.—F. *Alcool;* Ger. *Alkohol, Weingeist;* It. *Spirito ardente, alcool.* (See also *Spirits, Potato Spirit, Silent Spirit,* etc.)

An ardent spirit, transparent and colourless, obtained by distillation and rectification from any fermented liquids; and when perfectly free from water, it is termed absolute alcohol, represented by C2 H6 O; in other words, Carbon 52.2, Hydrogen 13.0, and Oxygen 34.8. It has usually a sharp, penetrating, but agreeable spiritous smell and burning taste.

The term alcohol, although frequently given to any spiritous liquors, is properly applied only to highly-rectified spirits of wine.

The dilute alcohol distilled from wine or fermented grape juice is called *brandy*, that from the fermented juice of raw sugar, *rum*, and owe their flavours to the wine and sugar.

Alcohol is also derived from many other fermented products of saccharine, vegetables, fruits, and grain.

During the last two or three years immense quantities of alcohol have been produced at the maize factories and the cane sugar factories in Argentina, and at extremely low prices.

It is remarkable how alcoholic products have engaged the attentions of certain religious orders. In Helyot's "*Histoire des ordres monastiques*" we read that in the seventeenth century the art of distillation was largely carried on by the Jesuits, under the pretext of preparing mendicaments for the sick poor. They got the name of *Padri dell' acqua vitæ*, and the business has long had a special attraction for the good fathers. Witness the *Chartreux*, *Trappistes*, and *Bénédictines* of to-day.

Alcohol never freezes, and is the only fluid that will dissolve certain gums, resins, and some other substances.

It is lighter than water, and very inflammable.

Its purity may be tested by its specific gravity, and its keeping its clearness when mixed with a solution of nitrate of silver.

Absolute alcohol, as stated above, means pure alcohol without any water—the Brit. Pharmacopœia says it should have the spec. grav. of between 0.794 and 0.7969—but absolutely pure alcohol is rarely met with, for the atmosphere itself would soon dilute it. In its strongest distilled form it contains 10 per cent. of water, hence commercial strengths vary; 70 per cent. strength means that in 100 parts of the fluid there are 70 parts of absolutely pure alcohol and 30 per cent. of water.

But there is a legal standard of spirits, which is called "Proof," and consists of 100 parts, viz., 50.76 parts by weight of water to 49.24 parts by weight of alcohol.

Proof Spirit is, therefore, an assumed standard of strength at the specific gravity of 0.920 at 60° F., from which standard the comparative strengths of all spirits are usually determined. In England a spirit having a sp. gr. of 0.838 is said to be 54 to 58 over-proof. When spirit is O.P. (over-proof) it is reduced to *proof* by the addition of water, spirit which is 10°, 20°, or 40° O.P. requiring

to each 100 gallons of spirit 10, 20, or 40 gallons of water to reduce it to proof.

Under-proof Spirit, said to be 10°, 20°, or 40° U.P. (under-proof), means that 100 gallons of the liquid contains 90, 80, or 60 gallons of proof spirit, and 10, 20, or 40 gallons of water.

The ordinary percentages of absolute alcohol in wines and liquors are: Beer, 4.0; Porter, 4.5; Ale, 7.4; Cider, 8.6; Perry, 8.8; Elder, 9.3; Moselle, 9.6; Tokay, 10.2; Rhine, 11.0; Orange, 11.2; Bordeaux, 11.5; Hock, 11.6; Gooseberry, 11.8; Champagne, 11.2; Claret, 13.3; Burgundy, 13.6; Malaga, 17.3; Lisbon, 18.5; Canary, 18.8; Sherry, 19.0; Vermouth, 19.0; Cape, 19.2; Malmsey, 19.7; Marsala, 20.2; Madeira, 21.0; Port, 23.2; Curacao, 27.0; Aniseed, 33.0; Maraschino, 34.0; Chartreuse, 43.0; Gin, 51.6; Brandy, 53.4; Rum, 53.7; Irish Whisky, 53.9; Scotch, 54.3.

It must, however, be remembered that most of these compounds differ considerably. The Bordeaux Aniseed of Marie-Brizard is only 27, while Cointreau's "Triple-Sec" (a white Curacao) is 40. Green Chartreuse is 58, but yellow and white only 43.

When alcohol is oxidised, it is converted first into a substance known as *aldehyde* and finally into *acetic acid* (see ACETIC ACID). The "alcohols" in organic chemistry denote a series of bodies, similar in composition to spirits of wine, which is distinguished as *ethyl* alcohol, while wood-spirit is termed *methyl* alcohol, and so on. Alcohol was first distinguished as an elementary substance by Albucasis, in the 12th century. The word is derived from the Arabic article *al* and *kohol*, to paint with a preparation of powder of antimony. Oriental women still practise the painting of the eyebrows with this material. The name was applied to this substance, and afterwards to other fine powders, and to highly rectified spirits.

In France and England alcohol employed for industrial purposes is exempted from a large part of the usual duty on spirits, providing it has been previously mixed with 10 per cent. of wood-spirit, which renders it unfit for the manufacture of intoxicating liquors, but does not impair its usefulness in other respects; this substance, known as "methylated spirit," is invaluable to the scientific and manufacturing chemist.

The Excise Board will not allow chemical dealers in this country to sell absolute alcohol without paying a heavy licence duty, which is out of proportion to the profits made by selling the article. The Customs impose no such restrictions on the foreigner so long as he pays the ordinary spirit duty. The consequence is that most of the absolute alcohol used by chemists in this country has been imported from Germany for many years. As the substance is solely used as a pure chemical, it is now largely imported in iron cylinders; but some comes also in tins by parcels post, and the postman collects the duty for the Customs on the delivery of the parcel.

Ale. — Dan. and Sw. *öl*; F. *biere*; Ger. *bier*, *äl*; Ir. *ol*; W. *cwrw*. (See also *Beer*, *Bottled Ale*, *Lager*, *Stout*, etc.)

Ale is a very old beverage; it was a favourite drink of the Anglo-Saxons and other ancient inhabitants of Europe, and was brewed from barley malt, but without hops; ivy berries or "ale hoof" (*Nepeta glechoma*) being used for imparting the bitter flavour. Fermented wheat, millet, rye, oats, etc., are now frequently used. Hops were first introduced in 1524 from Germany after many previous attempts to do so had been defeated by Parliament, and it was thus the German word beer (or *bier*) was first used to distinguish the hopped liquor from "*ale*," the un-hopped. Ale has always differed from beer in having *less* of hops and hence being sweeter and of lighter colour, but most of the finer kinds of ale are now highly hopped, or bittered, to make them keep better, especially ales for exportation and changes of temperature, and are now very fashionable in this country—particularly in summer. Ordinary ale intended for quick consumption need not contain any hops, and is often made entirely of pale malt, and the lower priced of these *mild sweet ales*, as they

are termed, are, as a rule, more nutritious than the strong bitter kinds.

Scotch ales are distinguished for the small quantity of hops they contain, and for their vinous flavour. The best *Edinburgh ales* are of pale colour, mild, glutinous, and adhesive; they are much stronger than *Porter*, from four to five bushels of malt being used to the barrel, and one pound only of hops to each bushel of malt. Excellent ales are also brewed at Alloa, Prestonpans, Belhaven, and other Scotch towns.

Highly coloured ale is made by adding to the malt a quantity, as may be desired, of strong, dried, and charred malt.

India pale ale is made with an extra supply of hops. There is no class of ale that tries the capabilities of the brewer as does *pale* ale. The hops should be the best, and neither be green nor too high coloured, and yet not such as to cause slackness or unsoundness. Saccharine is an important ingredient, and the best pale ales contain one part of saccharine to three of the finest and highest dried malt.

Burton ales, *Devonshire white ales*, etc., are referred to under their respective headings.

October and March are the best brewing months, the temperature of the air then permitting the cooling of the wort.

Strong ales are mostly made from the best pale malt, and the fermentation takes place slowly, so that the ferment is exhausted and separated; this and the large amount of undecomposed sugar remaining enables the liquor to keep long without a large amount of hops. XXXX—Few persons in the trade at the present day know the origin of the cabalistic X's with which some brewers ornament their casks so profusely, but in bygone times, in distinguishing between *small beer* and *strong*, all ale or beer sold at or above 10/- per barrel was reckoned to be *strong*, and was therefore subjected to a higher duty. The cask which contained this strong beer was then first marked with an X, signifying *ten*, or ale of the lowest quality; and hence the present quack-like denominations of XX (double X, or double strong, or ale of the second quality) and XXX (treble X, or ale of the third quality) which appear unnecessarily on the casks and in the accounts of the strong ale brewers. The more X's the stronger the ale is *supposed* to be; but a small country brewer, one day receiving an order for eighteen gallons of "strong" ale, promptly proceeded to rack off this quantity from a "cleanser" of running ale in the cellar. He then stencilled four X's on the cask, and when asked why not add another X, replied, "*Because the cask ain't big enough.*"

Sugar, glucose, rice, maize, gingelli seeds, aloes, wormwood, and numerous other substances are said to be employed by some brewers. Ales have been found adulterated with salt, *coculus indicus* (a very noxious intoxicant), grains of paradise (hot and acrid), chicory, sulphate of iron, powdered quassia-wood, alum, etc. It is notorious that a few years ago, when hops were extraordinarily scarce and dear, many new brewing substitutes were introduced, and still continue to be largely employed; and it is to be hoped that, notwithstanding the opposition of brewers and teetotal faddists, the "free mash tun" will soon be looked into, and pure ales again made entirely from barley, malt, and hops.

In Belgium and certain other countries the use of lead pipes in connection with beer machines is strictly prohibited.

A few years ago beer was brewed by a much greater number of persons, in proportion to the output, than is now the case, and every brewer had his own way. Many local peculiarities exist as to beers. For instance, at Nottingham a somewhat deep-coloured beer is preferred, while at Sheffield, only 40 miles off, it must be as pale as possible. In the latter town porter is scarcely ever drunk, while at Manchester, yet another 40 miles, it is highly popular. At Birmingham and in Sussex ale is stronger than beer; in the West Riding, exactly the reverse is the case.

Ale keeps best in underground stores at a temperature of 44° to 50°F.

Sour and muddy ales.—To remove acidity and sourness a few grains of carbonate of soda may be stirred into a glass of ale just before drinking, but if put in too long before it turns the ale "flat."

To fine or clarify ale of a dull or muddy appearance, draw a pint or so off into a bucket, stir in some "finings" till it is of the consistency of treacle, strain it through a piece of canvas to make sure it is all reduced to equal thickness, then add more ale till thin as cream, and again add more ale, and stir the whole well to a froth, draw out the large bung in the middle of the cask and with a funnel pour in the whole, also draw off a pailful at the bottom and pour it in again at the top. Then replace the bung and let the liquor rest for a week or so.

When ale tastes too new, put a sliced Seville orange into the cask.

Alegar. —An old name for sour ale converted into vinegar, now mostly used for dyeing purposes. The large amount of nitrogenous and other extractive matters which sour beers contain undergo a second or putrid fermentation after the alcohol has been oxidized into acetic acid, and in doing so reacts upon the acid, leaving the liquid of a very disagreeable odour. By adding a little sulphuric acid, this second fermentation may be postponed for some time, but the vinegar has, nevertheless, a very nauseous smell, which renders it objectionable. It has none of the pleasant flavour of genuine malt vinegar brewed in the modern way.

Alenquer. — A cheap kind of red Portuguese wine, produced in Estremadura; similar to a low-class Bordeaux.

Alexandrian Coffees.—A general term for Egyptian coffees which are shipped through the port of Alexandria.

Algaroba Beans.—See *Locust Beans.*

Algerian Tea or **The Arabe.**—The flowers of *Paronychia argentia* and *P. nivea*, used as a medicinal tea in Algeria, and thence imported into France, where it is well known as *Thé Arabe.*

Algerian Wine. — See *French Wines.*

Algin or **Sodium Alginate.** — A glutinous mass manufactured from seaweed.

It resembles new cheese, and will keep any length of time if stored in an ordinary cool drying-room. By adding a little bleach it can be made perfectly white. It can easily be dissolved by carbonate soda in the cold for use.

The evaporation is effected in the same way as gelatine, in thin layers on slate shelves in a drying-room with a current of air, or on revolving cylinders heated internally by steam.

The solution keeps well.

Thus obtained, the sodium alginate presents the form of thin, almost colourless, sheets, resembling gelatine, but very flexible. The solution can be precipitated or coagulated with citric or tartaric acid or lime water. It contains nitrogen. It won't coagulate by heating. It won't gelatinize on cooling. It dissolves in weak alkaline solution, but is insoluble in boiling water.

As an article of food, *Algin* contains—Carbon, 44·39; hydrogen, 5·47; nitrogen, 3·77; oxygen, 46·37, or about the same amount of nitrogen found in Dutch cheese.

It has a slightly pleasant marine taste, easily overcome if objected to, and may form a useful addition to the kitchen for thickening soups and puddings.

It appears specially adapted to replace gum arabic in the manufacture of jujubes and lozenges.

To make it into jelly requires addition of gelose or gelatine or admixture of lemon juice.

It is useful for emulsion of cod liver oils, as an excipient for pills, and for fining of spirits.

Alicante Raisins. — Raisins produced in the province of that name in Spain.

Alicante Wines. — Rough sweet Spanish wines, of which Alogne and Vino Tinto (red tent wine), from the province of Alicante, are best known; when old the latter sort is called Fondellol—

alcoholic strength, 14 to 15 degrees. They are both of very red colour and often used to manipulate thin clarets for the British market. The ordinary wine of Alicante is of sound quality and generally very cheap, say £4 or £5 a pipe, according to season and quality.

Alimental Oils. — See *Edible Oils.*

Alkali or **Alcali.** — F. It. Sp. *Alcali;* G. *Alkalien;* Per. *Kaliab.*

A term applied to such chemical bases as potash, soda, ammonia, and the like salifiable substances which have the following properties in common: solubility in water, the power of neutralising acids and forming salts with them, the property of combining with fats and oils to form soaps, corrosive action on animal and vegetable tissue, the property of changing the tint of many vegetable colouring substances, as of litmus reddened by an acid to blue, or turmeric from yellow to brown.

In its restricted sense the term is applied to the hydrates of potassium, sodium, lithium, cæsium, rubidium, and ammonium.

In a more general sense it is applied to the hydrates of metals, of the alkaline earths, barium, strontium, calcium, and magnesium, and to a large number of organic substances, both natural and artificial, such as morphine, nicotin, quinine, etc. Potash, soda, and lithia are called *fixed* alkalies in contradistinction to ammonia, which is called a *volatile* alkali.

Alkanet, Alcanna, or **Anchusa Root.**—Du. *Alkana*; F. *Orcanette*; Ger. *Orkanet*; It. *Ancusa*; Sp. *Alcaneta.*

A deciduous herbaceous plant, *Anchusia tinctoria,* grown in France, Siberia, Spain, Hungary, etc. (but the English climate is too cold in spring), bears dark blue flowers, has a dark blood-red root, yields a substance scarcely soluble in water, but used as a brownish-red colouring material. Only the outer skin of the root is used, so that the smaller roots are most valuable, the inner parts of large roots being white and valueless. Freely soluble in either acetic acid, oil, or spirits, it is largely employed in staining furniture, in imitation of rosewood, and, like Dragon's Blood, for giving a crimson colour to oils, fats, cheese, wax, spirits, pomatums, varnishes, essences, etc., by simply placing it in them. It is also used for colouring factitious port wines and the corks to give them the appearance of age and genuineness. Several other Boraginaceous plants with red roots, such as *Onosma echioides, Arnebia tinctoria,* etc., are often substituted.

Alkermes.—A liqueur much used in Tuscany, Spain, etc., made from bay-leaves, mace, nutmegs, cinnamon, and cloves. These spices after being well bruised are mixed with brandy, and the whole is then subjected to distillation. The product is afterwards flavoured with an extract of *Kermes berries* (*Coccus ilicis*), small insects about the size of peas, found on oak trees on the shores of the Mediterranean.

Allcock's Porous Plaster.—India-rubber, 1 lb.; pitch, 8 ozs.; gum thus, 8 ozs.; and cayenne pepper, 30 grains, the last ingredient being added when the others are previously melted. The mass is then spread on muslin or linen perforated with small holes, allowing vent for perspiration and affording increased flexibility.

Allen's World's Hair Restorer.—An ordinary bottle contains about 75½ grains of sulphur and 87 grains of lead acetate, with 8 ozs. of water.

Alligator Pears.—A common name for *Avocado Pears.*

Allonya Tubers or *Topee Tamboo.*—These small tubers are used as food in the Island of Trinidad. They are of globose or egg shape, all bound together by stalks, thus forming the large ovate bulbous root of the plant *Calathea Allonya,* one of the *Scitamineæ.* The smaller tubers are usually selected for edible purposes, being boiled and eaten like the ordinary potato, with milk and salt.

They have an agreeable nutty flavour and contain very little starch, but a relatively large amount of gummy matter.

Allspice, or Jamaica Pepper.—F. *Toute-épice, Piment de la Jamaique.* Old-fashioned names for *Pimento*, which see.

Almeria Grapes.—See *Grapes.*

Almond Drops (*Biscuits*).—The following is an average mixing for above :—4½lbs. flour, 1¼lbs. margarine, ½ oz. baking powder, 4½lbs. sugar; when rubbed, make a bag, add fourteen eggs and a little essence of almonds, roll in long fine strips, cut off in half inch pieces, stand on ends half an inch apart and bake in a cool oven.

Almonds.—Da. and Sw. *Mandel;* Du. *Amandelen;* F. *Amandes;* Ger. *Mandeln;* It. *Mandorle;* Port. *Amendoas;* Sp. *Almendras;* Sw. *Mandlar.*

The fruit of the almond tree, *Amigdalus communis*, of which there are two kinds—the *A. c. var: dulcis*, or sweet, and the *A. c. var: amara*, or bitter. The tree itself is a native of Africa, but thrives throughout Southern Europe, and is largely cultivated in Italy, Sicily, Sardinia, and the Greek Archipelago, Spain, France (especially Provence and Languedoc), Malta, and the East. It grows twenty to thirty feet high, and has flowers before leaves. Although almond trees flourish almost anywhere between 27° and 45°N. latitude, they seem to prefer a mean annual temperature of about 58°F. and thrive best in low sunny grounds of light soil, sandy or gravelly, but not clay. In France the average yield is 12lbs. per tree, but in California it reaches 20lbs. per tree. When growing on the tree the fruit is covered with a hard green shell, which dries as it ripens in August, and at last opens, when the almond falls out. The eye can discover no difference between the trees, leaves, or fruit of the sweet and bitter kinds. The bitter kernel is often thicker, but smaller in size, than the sweet kind. It is fancied that the *bitter* almond is the product of the wild ungrafted tree with its white blossom, while the *sweet* is that of the cultivated and grafted one with pink blossom. The two great commercial divisions are *Shelled almonds* (Amandes Cassees) and almonds in the shell, or *Unshelled* (Amandes en coques), but they are of great variety, certainly over 500, and all have a pleasant nutty aroma. They reach England in the ember months. *Jordan* are considered the best; they are large, sweet, flat, and oblong, less pointed at one end, and less rounded at the other, and have paler skins. They have also thick hard shells, and are very extensively imported, without the shells, from Malaga in boxes. Other Malaga varieties are almost cylindrical in shape, and these have a remarkably fine flavour. The bulk of the almonds in the shell sold in England come from Faro, Tarragona, and Barbary.

Valentia Almonds are another highly-valued species. They also are large and sweet, but broad, flat pointed at the end, and compressed in the middle. They also come without the shell from Malaga.

Nearly every kind of almond is grown in Spain, where they are divided into two general classes—the sweet (*almendras dulces*) and the bitter (*almendras amargas*), the former being cultivated chiefly in Alicante, and are of five varieties: *Pestañela, Bale, Blancal, Mollar,* and *Comun.*

In 1894 Spain exported, in shells (*Amandes en coques*), 1,430,000 Kilos, and without shells (*Amandes cassées*), 3,475,000 Kilos, mostly to Great Britain, France, and the U.S.

France also produces two varieties of almonds in the Bouches du Rhone department, Aix and Salon being great centres for this trade. The best are called Princesses, and the others Lady almonds. Marseilles is the port of shipment, and the bales contain 120 to 150 Kilos. Sweet almonds are eaten in dessert, and, taken in moderation, are nutritive and demulcent; but, consumed in large quantities, they are purgative.

The climate of the middle and south of France is well adapted to the growth of almonds, and in the summer they are commonly sold, while green and tender

and both shell and husk are soft (like green walnuts), by the dozen or hundred in the country markets at from one farthing to 2½d. per dozen. The meat is then quite white and creamy.

Bitter Almonds (Amandes ameres) are usually imported in boxes from Barbary and Mogador. They contain a great quantity of prussic acid (a deadly poison), and, besides their bitter taste, may easily be known from the peculiar odour they give out when rubbed with water. If used in cooking or confectionery, it should be with great caution, *even small* quantities having been known to produce nettle-rash and other unpleasant symptoms. When "*Almonds*" merely are asked for in the shop, the *sweet* kind should always be supplied. Both kinds are sold shelled (without shells) and unshelled (in the shell), and contain about 50 per cent. of an aromatic oil, with other constituents in common, and are used whole or in part in very many kinds of sweetmeats, pastry and drinks. The *bitter almond* is generally compressed for its oil (H C N), and the remaining cake is mostly used as a cosmetic. Brandy or ammonia may be given as an antidote for almond poisoning.

The Dwarf Almond.—A. nana is a common double-flowering variety. It is a mere shrub, growing but two or three feet high, in Russia. The fruit is very small. Almond trees, especially the Dwarf, are not unfrequently met with in England and other Northern countries, where, although the fruit never matures, they are grown for ornamental purposes, and for the large and early spring blossoms so highly prized by English brides.

Green Almonds are sometimes preserved in sugar like apricots. They are the young fruit of the sweet almond trees, and may be eaten green or dried, and sometimes converted into *orgeat*, a very refreshing summer drink.

Blanched Almonds are prepared by soaking shelled almonds for a short time in hot water, after they have been hand-sorted into different sizes, when the skins, husks, or seed-coats are easily removed between the finger and thumb. The translucent white tegmen, or inner coat, comes away at the same time. In well-appointed factories this is done by passing the almonds through a machine with revolving cork rollers. The rollers are so set that they exert just sufficient pressure to burst the skin, without bruising the kernel. The almonds are afterwards rinsed in cold water, drained, and wiped dry. If they are to be kept some time, or ground, they should be slowly dried by a warm stove or in the air or sun. Sometimes the blanched product is cut or shred; if shred, the mass is dried thoroughly in hot revolving pans and used in a desiccated condition. See also "*Burnt Almonds.*"

Apply to Kimpton Brothers, 36 and 37 Mincing Lane, London, E.C.

Almonds (Essence of). — For flavouring wines, cordials, liquors, perfumery, pastry, and other culinary productions. Generally prepared by mixing one part of the essential oil of almonds with sixteen to twenty-four parts of rectified spirits.

The oil obtained from *bitter* almonds being very poisonous (four times stronger than prussic acid), the essence from it should be made very weak.

Much confusion exists as to what is essence, what is essential oil, and what is pure or genuine oil of almonds. In America, what in England are classed as essences — spiritual essences — are called *extracts*, and essential oils are there called essences. In the case of almond oils, essences, or extracts, it is highly important to be certain as to which is intended.

For essences of all kinds, apply to Charles Cocks and Co., Reading, Berks.

Almond Oils.—There are two distinct kinds of almond oil, viz., the *essential oil* and the expressed fixed oil of almonds. They are both of a thin pale yellow colour, whether expressed from the sweet or bitter almond, and almost odourless, but with a bland oleaginous and nutty taste. Bitter almonds are submitted to powerful hydraulic pressure, by which means

the contained fixed oil is expressed. The residual cake is then treated with water, and the mixture distilled, the essential oil now passing over. The almonds do not contain the volatile oil ready formed, but the materials necessary for its production. These are a glucoside called amygdalin, to which is assigned the formula $C_{20}H_{27}NO_{11}$, and emulsin, a substance belonging to the class of albumenoid ferments. The distilled oil of bitter almonds is ten to twenty times stronger than the spirituous "*Essence of Almonds*," and contains a dangerous amount of hydrocyanic acid, or prussic acid—about 13 per cent., but is generally more or less purified by a dilute solution of potassa, or by treatment with iron in *aqua-regia* solution and distilling with lime water.

It is often found to be diluted with ordinary sweet oil, and imitated with oil from peach kernels.

A factitious oil of almonds, known also in trade as *nitro benzole*, *oil* or *Essence of mirbane*, etc., is now extensively prepared and sold as a substitute for the genuine oil of bitter almonds.

It is really a compound of concentrated nitric acid and benzole.

Best English prepared oil of bitter almonds, freed from prussic acid, is worth about 28/- per lb.; foreign, 15/-; with prussic acid, 13/-; and the factitious kind, about 2/6 per lb.; sweet genuine (*i.e.*, the fixed oil obtained by pressure and which contains olein with some stearin, palmitin, etc.), 8d. to 1/- per lb.

True almond oil consists chiefly of olein, and its congealing point is therefore very low, namely 4° below zero F.

In buying or selling almond oil it is highly important clearly to understand what is really required and for what purpose.

For prices, etc., apply to C. Windschuegl and Co., 1 Leadenhall Street, London, E.C.

Almond Soap.—Also called *Amygdaline Soap*. Generally made of common soap, coloured dark yellow, and scented with almond oil and sodium hydrate—say twenty-one parts of first and ten of latter. Common sorts are often scented with nitro-benzole to imitate almond odour and to hide disagreeable smell.

Almond Syrup.—See *Orgeat*.

Aloes.—The bitter and purgative juice extracted from the fleshy leaves of certain trees, such as *Aloe vulgaris*, the Common or Barbadoes Aloe (which grows wild in India, Spain, and the Canaries, and is cultivated in the West Indies), the *Socotrine Aloe*, imported via Zanzibar and Bombay, and the Cape Aloe (*A. spicata*) etc.

Imports, about 300 tons annually, are commercially classed as Socotrine, Barbadoes, Cape, or Hepatic.

Alogne Wine. — See *Alicante Wines*. Da. *Allun*; Du. *Aluin*.

Alum. — F. *Alun*; Ger. *Alaun*; Du. *Aluin*; It. *Allume*; Sp. *Alumbre*; Port. *Pedrohume*; W. *Allawg*.

A whitish, lumpy, saline substance or *double-salt*, a combination of aluminia with sulphate of either potash, soda, or ammonia. When pure and fresh it is brittle, odourless, and almost colourless, has a sweetish, aciduous, and very astringent taste. It used to be produced largely at Hurlet and Campsie, near Glasgow, from alum-slate or shale; also near Whitby, Yorkshire; but now it is chiefly manufactured at Goole, Newcastle, and Manchester. A great weight of this argillaceous schist being required to produce a small quantity of alum, the manufacture has to be carried on as near as possible to where the former is found. In medicine alum is an important and powerful astringent; it checks hæmorrhage, diminishes secretions, and is frequently administered in cases of diarrhœa, and is perhaps the most successful remedy known for *lead-colic*.

From its powers to contract and to corrugate the animal fluids and tissues it is often used as a gargle, a wash, or an injection. Ground or powdered alum dusted over a leech-bite, prick, or slight cut is good for stopping the bleeding.

It is also used in tanning and in

candlemaking to whiten the tallow; also for clarifying liquors.

Alum often contains traces of iron, but this is injurious and may easily be discovered by adding a few drops of water in which bruised nutgalls have been boiled, when the solution will show a purple tint.

Ground or *Powdered Alum* is often used by bakers to make white bread from cheap dark flour. It also imparts to the bread the property of absorbing and retaining, after it is taken out of the oven, a larger quantity of water, but this is denounced as an injurious adulteration, and renders the offender liable to a severe fine and exposure.

It is also often used in baking powders to help to keep them dry and fresh in appearance, but is finable.

Alum Water is frequently used as a wash for old sores, and diluted with rose-water as an eye-wash. It is also used to whiten sugar in manufacture.

Muslin dipped in a solution of alum is rendered incombustible. This salt is also used to fix vegetable colours in cotton goods; such colours being then called "fast."

Rock, *Roche* or *Burnt Alum* is alum crystallised and deprived of its water by heat, and thus forms a mild escharotic for external use.

Alva or **Aiva.** — A conserve of quinces, forming an article of commerce in the East.

Ama Tsja or **"Tea of Heaven."** —A kind of tea prepared in Japan from the leaves of *Hydrangea serrata*, or *Thunbergü*.

Amatimgulu, or NATAL PLUMS.— The fruit of *Carissa grandiflora*, first imported into England, from Africa, about 1862, varying in size from an olive to a plum, and possessing a milky sub-acid juice, due to caoutchouc. The flavour is pleasantly acid, and very refreshing, but these fruits are rarely to be met with in this country.

Ambergris. — This odoriferous substance, the most costly of the animal perfumes, obtained its name from the fact that an antique author, Robert Boyle, considered it to be of vegetable production, and similar to yellow amber, hence it was dubbed amber-*gris* (grey amber). In the "*Arabian Nights*," "*Sindbad the Sailor*," and many other works, equally plausible, but fallacious, theories have been put forth regarding it. It has, however, been ascertained beyond a doubt to be generated by the large-headed sperm-whale (*Physeter macrocephalus*), and is the result of a diseased state of that animal. The disease is in the intestinal canal, and the victim may throw off the morbific substance, or may die of the malady. When discovered, the fetid mass is carefully taken from the bowels of the whale, and is packed in casks, if it is in liquid form, or in sacks if it is dry enough. Sometimes it is found to be in a rank liquid state, sometimes of the consistency of soft putty, and at other times a chalk-like substance. That which is like putty is preferred for the market, and when dried the dark shade gradually turns to a soft squirrel-grey. It lightens in weight, and develops an odour like the blending of new-mown hay, with the perfume of the violet. Crude ambergris, obtained by the whale fishers of New Bedford, or Provincetown, is shipped to France, where, more than anywhere else, it is prepared so as to give lasting qualities to the more fleeting scents. In the East it is used in cookery. Market grades, 20s. to 80s. per ounce.

Amboyna Cloves.—A small dark-coloured variety, considered of superior quality to ordinary cloves, and fetch highest prices. (See *Cloves*.)

Amel Wheat.—See *Gommer*.

American Apples.—(See also *Dried Apples, Green Fruits, etc.*)

These include apples from the U.S. or from Canada, and are all of excellent quality.

Apple trees were first introduced into America from England in 1629, by the Governor of Massachusetts Bay. The crop is now about ten million barrels a year.

The chief standard varieties of winter sorts are the Russets, Baldwins, Spitzenbergs, Greenings, Kings, Canada Reds, Ben Davis, Spys, and Newtown Pippins.

The "Ben Davis," or turnip apple, is rather a peculiar cooking apple. Having no particular flavour of its own, it readily takes the flavour of any other fruit with which it may be cooked. It keeps well all the year round, and never rots, even when considerably bruised. Frost never injures it, but it is not generally liked, any more than our own unfortunate "Sturmer Pippin," and is considered very coarse and flavourless. Immense quantities are grown in Canada, particularly in Western Ontario, where the trees bear so heavily that they have to be supported, and the fruit in bumper years is too cheap to pay for gathering.

The Canada "Duchess" is a very useful variety of medium size, pale green in colour, with a few dull red longitudinal streaks at its base.

"*Kings*" take their name from King's County, in Nova Scotia, where large quantities are grown.

The best apples grown in America are left on the trees till the middle of October, when they are hand-picked, and placed softly in clean barrels. The barrel is gently shaken three or four times during the filling, so as to secure close packing, and when the barrels are full, and well heaped up, they are placed in a press, or "barrel-header," and the heads or bottoms are pressed on by a special hand-lever, the apples being thus more or less pressed into each other; but this does not injure them much, as one fruit stays where pressed into another, and air is excluded. The indentation from the pressure merely impacts the juices, and there is less decay than by loose packing. It is, in fact, the action of air which causes decay. The apples are usually left in some cool place till frost sets in, when the barrels are stacked on their sides in cellars, but it is only in those parts of America where the autumns are cool that apples can be raised for preservation.

In Mills County, Iowa, there is an orchard 1,000 acres in extent, and containing 110,000 apple trees. The grades exported are "firsts," "seconds," and "thirds."

The refuse and damaged apples yield Cider of inferior quality, and the pomace, when washed, yields apple seeds, which bring about five dollars a bushel. From 100 to 200 bushels of apple seeds are frequently sown by single firms in America, producing millions of "stocks," which are sold two to six dollars a thousand. These stocks are grafted by men and boys in the winter season, packed in sand or sawdust in cellars, planted in nurseries in spring, and after two summers' growth are sold from 50 to 200 dollars a thousand.

It has frequently been insinuated by British protectionists that American apples are poisonous, and should at least be either pared or carefully wiped, in consequence of their having, while growing, been saturated with *London Purple* or *Paris Green*, which are used to fight the Codlin moth; but this danger may be dismissed as mythical. It is true that most of the trees and fruit are sprayed with these poisons, but it is while the apples are very small, and every trace of arsenic is washed away during the three or four months before gathering. It is true, also, that a short time ago large quantities of apples were seized by the New York Board of Health and destroyed on the testimony of some health officers that they were poisonous and dangerous to eat, owing to above practice of spraying the trees; but repeated chemical analyses, both before and since, have failed to detect any poison on the edible fruit when gathered for the market. Moreover, the Americans eat apples in profusion, and millions of barrels have come to this country (say half a million barrels every year), but who ever heard of anyone being poisoned by apples!

Greater uniformity in packing is highly desirable, and when the farmers

find out that the manner of packing greatly influences prices they will take more care than they usually do. A neatly-packed barrel of apples brings 4/- to 8/- more than one into which the apples have been thrown without any effort to make a good show. The best way is when you begin to pack, turn the barrel upside down, the head resting on the ground or floor, then take the bottom out, but leave the head in, and cover it with a piece of thin paper. Then choose about a peck of the prettiest and finest apples, wipe them clean, being certain that there are no spots on them, or in any way disfigured, then place them in the barrel with their stems down, first placing them around the rim of the barrel, entirely round the same, after which make another ring, until the whole is covered. Then pour in more apples, and when the barrel is full, press the bottom on as already shown, and finally turn the barrel head upwards. When such a barrel is opened from the top, the apples will be found in good condition, even and nicely packed.

The freight from Boston to Liverpool varies from 1/6 to 2/- a barrel, but from Halifax, Canada, it is 3/-. A barrel of American apples (2¼ bushels) should contain about 150lb. The American and Canadian barrel is about one-tenth larger than that known as the Nova Scotian. This latter province exports about 500,000 barrels a year, and they are mostly from the Annapolis Valley (see also *Canadian produce*). They keep best closed up in the barrel at a temperature of about 30°. They should not be exposed to frost, unless very slightly. When opened they rapidly deteriorate. If they sound loose in the barrel it is a sure sign they are in bad order.

American Bacon, Hams, etc. —(See also *Pork.*)

These arrive in large boxes, weighing 500 to 750 pounds each, packed with either salt or borax, and with the weights and contents marked outside.

Cincinnati used to lead in the slaughter of pigs, but now Chicago, killing some six million a year, is far in advance. The total killed in the United States is about fifty millions yearly. American bacon, being maize fed, contains a much larger percentage of water than English, and loses about 50 per cent. in cooking, while English only loses 25 per cent., but for all that England takes above half the American export, and receives about 200,000 tons a year from that country. The average size of the hogs slaughtered is about 230lb. Nine-tenths of it is now "borax cured," after being cut up into sides, hams, square shoulders, about 14lb. each, and clear bellies, 13lb. to 16lb. each. It is first cured mildly with salt and saltpetre, and then before shipment is liberally sprinkled with borax or other bore preparations. These latter will restore meat already in course of decomposition to a fresher appearance, but which, if eaten freely, may endanger the consumer's health. On arrival in this country the meat is taken from the boxes, washed, wiped, partially dried, and again dusted with borax, pea flour, or oatmeal. Sometimes it is slightly smoked, and some rubbed with "liquid smoke," to make it appear something like well-seasoned English bacon, but the boracic acid seems to permeate the whole, gives it a soapy appearance, and spoils the flavour. "*Boneless Ham Butts*," also "*Loins*," are now arriving as chilled pork in increasing lots from Boston, packed in cases of about 50lb. When dressed and cooked carefully they have proved very saleable. (See *Pork.*)

The names given to the various cuts are somewhat misleading. The "Wiltshire," "Cumberland," "Preston," "Staffordshire," "Yorkshire," titles merely refer to the *style of cut*, and should not represent the products to be those of the English counties named. Unfortunately, these cuts after arrival are sometimes dried, smoked, or rolled, and labelled so as to deceive the consumer, but the Legislature is trying to stop the system.

Shrinkage in Washing, Drying, and Selling American Bacon and Hams.

Provision dealers will appreciate the following excellent observations of Mr. R. Rutherford, President of the Liverpool and District Grocers' and Provision Dealers' Association, on American bacon calculations:—"In arriving at the loss on Borax or Salt-packed Meats," says Mr. Rutherford, "there are several factors to be considered. For instance, Square Shoulders and Long Cut Hams do not lose so much as New York Shoulders and American Cut Hams, which are pickled cured meats. From careful observations of different packers' goods, taken at various seasons of the year, the average shrinkage in drying (after hanging a week), ranges from 7 lbs. to 10 lbs. per cwt., according to the season of the year and the cure of the goods.

"Bellies and Shoulders lose rather more in drying than Bacon and Hams. It should be particularly noted that this calculation is based upon 7 days' drying only; should the goods continue hanging longer, they will lose, on an average, 3 lbs. to 5 lbs. per week per cwt.; but it is very injudicious to keep American provisions hanging longer than a week, because the depreciation in quality after that time is very marked, especially in borax-packed goods.

"Retailers often calculate the drying of hams and bacon in a rule-of-thumb way, reckoning that "a farthing a pound will dry bacon," and on this basis they estimate their profits. Upon reflection, it is obvious that if it takes a farthing a pound to dry bacon at 28s. per cwt., it must necessarily cost two farthings to dry it at 56s., the loss being calculated on the pounds of meat LOST IN THE DRYING.

"For instance, if a cwt. at 28s. loses 9lbs., which at 3d. per lb. is equivalent to 2s. 3d. in money, 9 lbs. loss at 56s. amounts to 4s. 6d.

"Another error frequently made in these calculations is that of adding the loss in shrinkage to the cost of a complete cwt., instead of adding it to the cost of the weight which REMAINS AFTER DRYING. If a cwt. of bacon costing 56s. in the box loses 10 lbs. in drying, the 102 lbs. left will cost 56s., consequently on this basis the cost of the cwt. would be 61s. 6d., not 61s. The absurdity of a retailer being at all times armed with a book of formulas and tables is admitted, but, if for convenience, it be necessary to adopt a rough-and-ready method, by all means allow the fraction to lean to the safe side, and add a halfpenny per pound to the price of all American meats costing in the box below 56s. per cwt., if sold within 7 days. It is extremely difficult, considering the various and fluctuating prices, to illustrate how the profit on Bacon, Hams, and Shoulders may be calculated with any degree of certainty. A good plan is to keep in mind a few safe rules and axioms as a basis for calculating the minimum profit that will avoid a loss.

"The following, among others, may be found helpful:—First, ascertain the DRY cost of the Bacon, Hams, etc., then add a seventh of the cost, and let this be the minimum price you must receive for the whole, getting as much more, of course, as the circumstances of your particular trade will admit. For instance, if the dry cost of a side of Cumberland Cut be 5¼d. per lb., a seventh added will bring the price to about 6d. per lb. This would be exactly 12½ per cent. on the turnover, which would in most cases show a net profit of 2½ per cent., calculating the average working expenses in a provision shop at 10 per cent. on the turnover. Considering the losses arising from waste, overweights, etc., connected with the bacon trade in shops where there is much slicing, or where small cuts are sold, this is the smallest profit that should under any circumstances be tolerated.

"If competition be so keen that such a minimum profit cannot be

realised, then either cease selling bacon or give up the shop, because such business can only result in loss, —possibly disaster!

"To illustrate the seriousness of not carefully noting the loss in drying, if eleven boxes of bacon, weighing 5,500 pounds, be hung up for 7 days, and then re-weighed, it will be found that about 500 lbs., which would represent one complete box, have been lost in shrinkage.

"In rolled bacon the loss is proportionately more startling, for out of five boxes the loss in drying and boning would represent about one box."

ROLLED BACON.—"The loss in rolling and drying bacon," continues Mr. Rutherford, "varies according to the weather and the cure. The average loss from boning is 10 lbs. to 12 lbs. per cwt., drying 7 lbs. to 10 lbs. per cwt. Taking the mean of these calculations and estimating the loss at 20 lbs. per cwt., or calculating 92 lbs. when rolled at the box cost of 112 lbs., it works out as follows:—

Rolled and Dried.

Bacon costing in the Box—

30s. 6d.	" L. T." will cost	4d.	per lb.
34s. 6d.	"	4½d.	"
40s.	"	5¼d.	"
44s.	"	5¾d.	"
48s.	"	6¼d.	"
51s. 9d.	"	6¾d.	"
55s. 6d.	"	7¼d.	"
59s. 6d.	"	7¾d.	"
63s. 3d.	"	8¼d.	"

In the above no account has been taken of labour and twine, as they stand against the value of the bones.

"A simple way to quickly ascertain the cost of dry rolled bacon is to add 1-5th on to the cost of the box price. This will be found near enough for ordinary practical purposes.

"Smoked bacon costs 1s. 6d. per cwt. over dry price.

"C.I.F." terms is approximately 1s. 6d. on 50s. per cwt. over "L.T." or Liverpool terms-

"Box weights" is approximately 1s. on 50s. per cwt. over "L.T."

"The above calculations are based on a 4 per cent. Bank Rate and the maximum loss of 2 per cent."

Borax-cured, or rather borax-packed, bacon and hams have come much into vogue. Sometimes a pickle made of salt, borax, sugar, saltpetre and water is forced into the meat by a pump; sometimes the brine contains no borax, but borax is dusted over the bacon afterwards, and it should be remembered that borax only helps to preserve the meat after it has been cured with salt or brine, and that although it keeps the meat from becoming too salty, it is not so reliable, and will not keep so long as salt-packed.

The use of borax is, however, now general among American packers, and is applied at the rate of about 7lb. to a box of bacon. The meat can be cured and sold much sooner when borax is employed, but as it gives it a soapy appearance, it should be washed off with tepid water before retailing.

A very useful illustration of the various American Ham and Bacon Cuts is published (price 6d. or 7d.) at the office of *The Grocer*, Eastcheap Buildings, London.

Special Importers—George Wall & Co., Ltd., Liverpool and Manchester, Special Agents for the "Runic," "Wallflower," and "Walnut" brands. (See advt., p. 10.)

American Cheese.—The chief American cheese States are, in the order of their importance:—New York, Wisconsin, Ohio, Illinois, Vermont, Iowa, Pensylvania, and Michigan.

The State of New York turns out half the total, and the production of this State with that of Wisconsin represents more than two-thirds of the total.

New York make is the best, and Wisconsin is fair, but inferior. Ohio cheese is often branded as Wisconsin, and cheese from both these and other States as New York.

The cheese made yearly requires the milk of about a million cows, and the export is 60 to 80 million pounds.

Ever since the factory system has been in operation large quantities of superior quality have been exported to the United Kingdom, and these compare favourably with our best.

The average weight of red is 63lb., and white 69lb. each, and the composition of the better makes shows water 22·59 per cent.; casein and albumen, 37·20; fat, 35·41; and ash, 4·80.

The earlier importations, even at their best, were rank, steepy, soapy, and scarcely fit to eat, but now American cheese is generally of excellent quality, more regular and uniform in size than English cheese, also clean-looking.

It is, in fact, the chief foreign opponent of the British producer, is largely consumed by all classes, and has acquired that position by the active study of principles reduced to practice in the system of manufacture

The Americans owe their system chiefly to the teachings of Mr. Joseph Harding, of Marlsbury, a pioneer in dairy education, and especially of that type of cheese known as the Cheddar. His method was to set the milk at a temperature of 80° F in a milk tub which could be artificially heated. As soon as the curd broke, it and the whey were raised to 95° or 100° F, which hardened the curd and separated the whey. During the heating the curd was stirred by a blunt instrument, and when this was over, the whey was separated while sweet. The curd was then allowed to stand, to develop acid, and when drained from the whey and cooled, was broken and ground. Whilst being ground, it was mixed with salt, 1lb. to every 36 gallons of milk. The cheese was then put in a press, and in a day or two bandaged. Mr. Harding observed that new made Cheddars gave out moisture at the rate of 2lb. per ton every 24 hours, and he used this fact to hasten or retard evaporation in the curing-room, when the temperature was lower or higher. By thus regulating artificial temperature, he could produce the finest quality of Cheddar cheese ever made, and being at all times willing and anxious to impart his knowledge, his system was speedily copied in America. The first shipment made from U.S. was in 1831, and from Canada, 1851.

An inferior quality, however, of American cheese, known in commerce as *Cheesine*, is often imported made up of either lard, cotton-seed oils, or oleomargarine. A sort of artificial milk is said to be first made by shaking up "bosch butter" or animal fat with warm skim milk, and the cheese is then made in the ordinary way. It is of good flavour, and doubtless quite wholesome, but to sell it as ordinary cheese is to cheat; the cream having been removed and sold for other purposes.

June Cheese—"Late June Cheese"—is that produced from pure grass milk, and is also termed "full cream" cheese. "Early June cheese" often includes fodder-made cheese.

"*Filled Cheese*" is a term applied to cheese filled with a compound of lard, cotton-seed oil, stale butter, or other fats, usually surrounded by a shell or outer casing of genuine milk cheese, and has chiefly emanated from Ohio, Illinois, and Wisconsin. (See *Margarine Cheese.*)

September Cheese, being made from well-seasoned grass, will keep the year round, and so commands higher prices than June make. Unfortunately, there are parties who keep June cheese in cold storage below zero till September, and then sell it as September make. Such cheese matures very speedily on the change of temperature and will not keep long.

During the last ten years United States cheese has fallen much out of favour on account of the practices above referred to, and the extent to which base imitations of popular European varieties is carried on in that country. The manufacturers, however, assert that such counterfeits are merely "*made to order.*"

English cheese factors have their agents in America, who select their cheese from different factories. These selections are usually collected at a central warehouse, and there the special mark or brand is put on, so as to do away with all risk of the dealers or consumer in England learning at what factory or district the cheese is made. The importer, and not the manufacturer, thus becomes known.

Latterly it has been strongly suspected that much of the Canadian cheese exported to England is really from the United States, and is only sent via Canada to deceive.

Cheese shipments from Canada and the U.S. during year ending:—

April	30, 1895	3,201,000	Boxes.
,,	30, 1896	2,766,800	,,
,,	30, 1897	2,869,491	,,
,,	30, 1898	3,443,519	,,
,,	30, 1899	2,875,997	,,

Calculated in boxes of 70lb. each.

American Crackers.—Also known as *Soda Crackers* and *Extra Toast Biscuits.*

This kind of biscuit, now so popular both there and here in such numerous varieties and imitations, was first made in the United States by Mr. G. Wilson, of Philadelphia. They appear to be made of flour and water, with a little salt, bicarbonate of soda (say one or two drachms to each pound of flour), and cream of tartar, worked into a stiff dough, rolled thin and then cut into squares.

These biscuits have a peculiar glassy fracture, and seem to require a proper cracker oven. To give any detailed formula here might lead to disappointment and loss.

Missouri flour, however, is said to be the best for crackers, and indeed for most kinds of biscuits. The best flour for this business is made at the Conemill, St. Genevieve, Mo. The peculiar limestone rock of that district is said to impart peculiar properties to the wheat, and it is eagerly sought for by biscuit makers.

Amfuhr.—A second quality of Moselle wine, produced at Burg, on the Rhine.

Ammerschwir.—A rich and luscious straw-coloured wine, produced on the Upper Rhine.

Amontillado Wine (*a-mon-til-yah-do*).—One of the finest and dryest sorts of three-year-old Sherry wine. It has a very bitter taste, and the peculiarity

of its flavour is a mystery of nature not yet understood. It is light in body and colour, rather than dark and rich, but contains more solids and sugar than *Montillo*, and is spoilt if brandy be added to it. Amontillados and the other "Finos," while young, breed more *flor de vino* (cream of tartar) than any other types of sherry.

Ammonia (Carbonate of). — F. *Ammoniaque;* G. *Ammoniak;* It *Ammoniaca;* Sp. *Amoniaco.*

A semi-transparent, fibrous mass, having the pungent odour of ammonia, itself a transparent gas, formed by the union of one part of nitrogen and three parts of oxygen.

The carbonate is used largely by pastrycooks in making light puff pastry, and as it is entirely dissipated during the baking, no ill effect can arise from its use.

It is also used for smelling salts, and called *Sal Volatile.*

Household Ammonia is easily made by dissolving, say, 2 oz. yellow soap in three pints of warm water. Then add 1 oz. pearlashes, and when nearly cold add 5 fluid ounces of strong solution of ammonia. Keep it well corked.

A solution of *phosphate of ammonia*, obtained by mixing a pint of water with about 3 ozs. of phosphate, is said to be the safest way of protecting clothing, curtains, and other fabrics against fire, by steeping them in it, after washing, starching, etc.

Liquid Ammonia is also now prepared for bath and other household uses, and sold in bottles.

Amomi or **Ammi Seeds.**—Dan. *Amomfris;* Du. *Amomizad;* F. *Amomes;* Ger. *Amömlein;* Sp. *Amomo.*

These brown grains or seeds are from the fruit of a genus of plants of the natural order of *Scitamineæ*, flourishing in the East Indies. They are identical with Malaguetta Pepper, the latter name being that given in the 13th century to the seeds exported from Tripoli. The plant bears a kind of pod or berry resembling a grape, and this encloses the seeds, which are about the size of chick peas. They have a hot aromatic taste like cinnamon, cloves, or pepper, and when good are light-coloured, heavy, and well filled.

Several species of this order yield the Cardomoms and Grains of Paradise of commerce.

Amoy Teas.—Grown in Fokien tea district on the east of China, which used to be the greatest tea country in the world. The trade in these teas has, however, been decreasing several years of late, and instead of exporting some 500,000 half-chests a year, the production scarcely reaches one-tenth.

The cause is attributed to vile adulteration with other leaves, sweepings, and dirt resorted to by the growers in order to meet the demands of money lenders and merchants who advance them money on usurious terms.

Anchovies. —Da. *Anchovis;* Du. and Sw. *Ansjovis;* F. *Anchois;* Ger. *Anchojin, Anschoven;* It. *Sardon Acciughes;* Sp. and Port. *Anchovas;* Sw. *Anjovis.*

The anchovy is a small but delicious bony fish, variously named *Brevorted menhaden, Alosa menhaden,* and *Engraulus encrasicholus*, four to six inches long, resembling the sprat, pilchard, and sardine. The anchovy in spring abounds in the Mediterranean, and the finest are caught off the island of Gorgona, near Leghorn, in May, June, and July. The fish are attracted to the boats at night by lighted torches, and are scooped up in seine nets. They are afterwards gutted and decapitated (the head and liver being exceedingly bitter), and packed with rock salt in small kegs weighing about 5lbs. each, gross as nett, also in alternate layers of salt and fish in larger casks, which latter after arrival in this country are opened and the anchovies filled with brine, coloured with Prussian red, and put into smaller bottles to retail at 6d. or 1/- each.

Anchovies are also packed in oil, after being cured in salt, besides being made into pastes, essences, sauces, etc. These fish are often cooked for the table by boning and frying in oil or butter, seasoned with cayenne, and served on toast, or they may be laid on thin strips

of brown bread and butter. They are also often eaten raw, the small fish being generally selected. "*Appetit Sild*" is a Norwegian term for Boned Anchovies. Inferior fish, such as sprats, pilchards, and sardines, are often sold for anchovies, especially in Norway, where sprats are regularly treated as anchovies, although excellent qualities of real anchovies also arrive from both Norway and Sweden, usually flavoured with cumin.

The *Sauclet du Languedoc* and the *Cabassous de Provence* are also varieties of the same family, and are frequently put up and sold as Anchovies.

The Americans preserve a species of anchovies, which they call "*moss bunkers*," in oil, like French sardines.

The genuine anchovy may be easily distinguished by its large silvery scales, the pink salmon colour of its flesh, the head is sharp-pointed, the snout of its upper jaw extends considerably beyond its lower jaw, its body is thin, and its mouth is large, the back is round, not sharp, and has a bluish-brown colour, the tail is widely forked and slender, *the ventral fin is much nearer the head than the dorsal one*, and this is the best test of all.

Anchovy Butter.—Generally made by mixing one part of anchovies, boned and beaten to a paste, and two parts of ordinary butter, with a little spice as flavouring.

Large quantities of anchovies are shipped to this country from Lisbon in barrels of about 1 cwt. each, and are usually sold by weight, gross for nett.

Anchovy Essence. — The unadulterated article is of a dirty brown colour, and the reverse of the bright-looking red preparation usually met with. The brilliant appearance is entirely owing to the addition of *bole armenian* or other artificial colouring matter. Bole armenian is, however, a fairly innocent medium, and 1lb. will sufficiently colour a thousand pounds of essence, but as much as 10lbs. and even 15lbs. of common red earth, venetian red, and chalk have been added by unscrupulous and cheap makers. When pure, anchovy essence possesses a very fine flavour, but the fish should be kept about two years to ripen. A good essence may be made as follows:—Pound the anchovies, boil the bones, etc., in a small quantity of water, add the fish to the strained liquor, with salt, pepper, and flour. Colour, if desired, may be improved with powdered annatto or infusion of cochineal.

Special firms—Charles Cocks & Co., Reading, Berks.; Osborn & Co., wholesale manufacturers, Newington Green, London, N.

Anchovy Paste. — F. *Pâté d'Anchois.*

Prepared by cleaning, boning, and drying the fish, then pounding it and rubbing it through a sieve to remove any pieces of bone and everything of a gritty nature, seasoning with salt and pepper. It is usually potted and covered with pure melted butter to exclude the air, or the lid may be fastened down with plaster of Paris or by other means. Anchovy paste is used as a relish; if kept long it should be stored in the dark and closed from the air to preserve its freshness and colour.

Most makers introduce lard and a little flour or meal to give it consistency and to increase the bulk. The most harmless colouring is a little cochineal or bole armenian, which latter, although a natural earth, is much less objectionable than other vivid substances often employed.

A Speciality:—C. Osborn & Co. beg to call attention to their *Pâté d'Anchois*, a la Francaise, as being the finest article introduced under the name of Anchovy Paste for Export. (See Adv. p. 4.)

Anchovy Sauce. — F. *Sauce d'Anchois;* Ger. *Sardellen Sauce.*

The anchovy was the basis of the old Roman sauces, then called "Garum," but most of the so-called anchovy sauces of to-day are made from cheaper fish, and only the best firms make the genuine.

Marine zoologists in this country have been devoting much attention to the anchovy, and an investigation by the Marine Biological Institution at Plymouth is likely to lead to the establishment, or rather re-establishment, of a regular anchovy fishery on our Southern coasts.

There seems no reason why an attempt this way should not be made, since the fish is known to be a denizen of British waters, and is always to be found in certain districts at regular seasons of the year.

Angelica or **Archangelica.**—F. *Angélique;* Ger. *Angelkraut, angelikawurzel.*

A candied or crystallised sweetmeat, prepared from the stalks of the large and umbelliferous plant, *Archangelica officinalis,* found on the banks of rivers and wet ditches throughout Northern Europe. Some varieties are cultivated in swampy situations near London, but that grown in France is by far the best. Medicinally it is considered a valuable stimulant, anti-pestilential, and agreeable stomachic.

The upper green stalks and stems are cut into lengths, boiled in sugar, and then dried or candied in much the same way as candied peels. The French preservers display considerable artistic taste in forming the pliant strips into knots, fishes, and various other ornaments. They are very delicious, and often employed as a green decoration for cakes, etc.

The fresh roots also are fragrant, slightly bitter, pungent, and sweetish, forming agreeable aromatic sweetmeats. To preserve these roots they should be well dried and kept in closely-stoppered bottles. In olden times various fancy cordials and aromatic tonics were prepared from them.

In Norway the roots are sometimes used as bread, and in Lapland and Iceland the leaf stalks are eaten with butter and salt-like celery. Indeed, the two plants possess many of the same characteristics.

One species indigenous to British Honduras, and St. Helena, known as *Sium Helenium,* grows 6 or 8 feet high, and much resembles celery. The inner parts of the stem are commonly eaten raw by the natives, and are of a tender succulent quality. It is marketed in short tubes, much like bamboo stems, and is sold under the name of "Jellico."

Angelica juice is also used in the manufacture of gins and bitters, and it is the prevailing flavour in *Benedictine.* (Many fatal accidents occur from persons using the poisonous *hemlock,* which should be known by its round, smooth stems, with purple or black spots, and its dark green and shiny leaves, which when rubbed have a nasty mousy smell, not unlike the urine of cats.) Angelica is usually sold in a green state by herbalists in summer.

The Wild Angelica (*A. sylvestris*) is sometimes substituted for the true cultivated variety, but is much inferior both in taste and colour.

The French growth, extensively preserved at Niort, Deux-Sevres, and Clermont-Ferrand, is much larger, thicker, and more fleshy than the English, besides which the flavour is softer and pleasanter. The best is in tubular stalks about eighteen inches long, two inches in diameter, the succulent flesh in the tube being about a quarter of an inch thick, and will keep perfectly sound and good for several years.

Débris d'Angélique is sold at about half price of best.

Angola Coffee.—This comes from the Portuguese colony of that name. Not being systematically cultivated, there is no definite type, but it is usually of medium size, concave in form, light brown in colour, strong and pungent in flavour, but somewhat rough, and without much aroma.

Angostura Bitters. — Angostura Bark or Cusparia Bark is the aromatic and bitter bark of the plant *Galipea cusparia,* a native of Venezuela, and derives its name from the city of Angostura, now called Ciudad Bolivard. "Cusparia" is the vernacular name for the same species of bark in New Granada. This bark is exceedingly bitter, and the odour musty and disagreeable, but is very valuable as a febrifuge.

Angostura Bitters, as a liqueur, now made in Trinidad by Siegert, but originally at Angostura, contain, or should contain, the extract of angostura (*canella cinchona*), lemon peel and other aromatics. It is a valuable tonic in dyspepsia, dysentery, and diarrhœa, but

in 1804 a kind of false bark, containing strychnine, was imported, and led to serious results, and its reputation suffered accordingly.

Angostura Coffee. — A large, flabby, yellowish bean variety, shapely in form, but light and chaffy in substance, and always "quakery" when roasted, the liquor being thin and almost flavourless.

Aniline Dyes, or Coal Tar Colours. — F. *Couleurs d'aniline;* G. *Anilin-Farben;* It. *Colori d'anilina;* Sp. *Colores de anilina.*

The word aniline is from *anil*, the indigo plant, but these colours are distilled from various organic bodies, amongst others indigo, but now chiefly from benzole, one of the constituents of coal tar.

Aniline was originally produced from indigo by Uverdorben, a German chemist, in 1834; and in the same year another German, Runge, extracted it from coal tar; but it was not until 1856 that it was manufactured in quantity by Perkin, and three years later Verguin, a Frenchman, produced aniline-red (Magenta). After that followed dyes and colours innumerable—violet, blue, orange, yellow, green, black, etc., usually by the combination of the products of tar oil or of their constituents, the pure and brilliant shades of which have largely displaced the dyes formerly extracted from woods and other vegetable substances.

These beautiful and most effective stains or dyes, of which there are at least 254 distinct colours, with different names, are chiefly made in Germany, that country beating the whole world in price and quality. They are obtained by chemical combinations with tar, producing very brilliant results and particularly on textile fabrics; but whether in the form of liquids, powders, or crystals, should never be used in foods or beverages. Many of them may be comparatively harmless substances, but some are decidedly poisonous. Seven of them possess marked poisonous qualities, of these five are yellow or orange, and two are green. Their names are: (1) Martin's Yellow, known also as Naphthalene Yellow and Manchester Yellow; (2) Dinitrocresol, or Saffron Substitute; (3) Picric Acid; (4) Metanil Yellow; (5) Orange II., or Beta Naphthol Orange. To these may be added Aurantia, which is classed as suspicious. The two green poisonous colours are (1) Dinitroso-resorcinol, and (2) Naphthol Green B.

Syrup of Violets is often adulterated with or substituted by these artificial dyes. They are often employed by unscrupulous manufacturers of cheap jams, confectionery, butter, etc., whose only care is to please the eye, regardless of their pernicious effects on delicate people and young children, but the late Mr. Bell, Chemist to the Inland Revenue Laboratory, has declared their use to be both an adulteration and a very deleterious one.

Aniline powders should always be dissolved by pouring hot water over them, and stirring thoroughly. They should never be boiled. The solution is more effective if used before becoming quite cold.

Special Firm—M. E. Holdsworth, 3 Norfolk Street, Bradford.

Aniseed. —Da., Por., and Sw. *Anis;* Du. *Anijs;* F., Ger., and Sp. *Anis;* It. *Anice;* Mal. *Adis-manis.* (See also *Badian, Star Anise,* etc.)

The small, oblong, and aromatic seed of an umbelliferous plant, like fennel, called *Pimpinella anisum*, largely cultivated in Russia, Germany, China, Malta, and Spain, the Chinese being considered far the best. It has been tried in England, but our summer is not warm enough to bring it to perfection.

The seed, about the size of a pin's head, contains a bluish volatile oil, known as *Oil of Aniseed.* It is used medicinally as a carminative, warms the stomach, and relieves flatulency, particularly in infants. Aniseed also forms a well-known balsam, an aromatic flavouring adjunct for sweets and cordial liqueurs, and it is used to neutralise nasty tastes in drugs.

Water flavoured with aniseed oil and sweetened makes a cooling stimulant

much used in Italy. It is also used largely at Bordeaux and Amsterdam in the manufacture of Liqueurs.

This seed should be fresh, large, plump, colour greyish green, with a good smell and of sweetish spicy taste. It is very similar in external appearance to the poisonous hemlock seed which has occasionally been mistaken for aniseed.

There are several species of anise, viz., the Bitter or False Anise, commonly called *Cumin*, the Bastard Anise or *Carvic*, the Sweet Anise or *Schinus*, the French Anise or *Fennel*, and the Star Anise or *Badian*.

Wm. Gardner & Sons, engineers, Gloucester, make machines specially suitable for treating above. Catalogues free.

Aniseed Cordial.—A thin French liqueur of weak spirit flavoured with coriander and sweet fennel-seed in addition to aniseed, and sweetened with clarified white sugar.

Anise Fruit or **Badian.**—This is a different thing to *aniseed*, and is the tanned and shining fruit or seed enclosed within the very hard and very thick little pods of an East Indian tree (*Illicium anisatum*). It is used for flavouring tea, liqueurs etc. The grey timber logs known as *anise wood* (so called on account of its scent) are largely used for turnery ware and inlaid work.

A pale yellow oil with the odour of the fruit and of aromatic sweetish taste is distilled in Europe from this fruit, but the best badian comes from China.

Anise Oil. — There are two sorts, one from the anise fruit (*Pimpinella anisum*) and one (*Ol badianæ*) obtained in China from the Star anise (*Illicium anisatum*).

Anisette (*an-iz-et'*) is the name given to a stronger, sweeter, and thicker compound liqueur than *Aniseed Cordial*, and is highly condensed. The seeds of the common anise, star anise or badian, umber, fennel, coriander, all enter into its composition, with cinnamon, nutmeg, etc., as flavouring. It is of rather sickly flavour, and although said to be very serviceable in warming the stomach and relieving flatulency, it is not so much esteemed as a dinner liqueur, but more as a medicine for children. The Dutch make is strongest, and contains the least sugar. It is retailed at about 4/6 a bottle.

Anisette de Bordeaux is a liqueur made in France by distilling fennel, anise, and coriander seeds. It is then fortified with brandy and sweetened with syrup.

The most popular in France is that of Marie Brizard (Bordeaux), which claims to be made according to the recipe of an old woman who lived there about two centuries ago.

Annatto (also spelt Anatto, Arnatto, and Annotto).—F. *Rocou;* Ger. and Rus. *Orlean;* It. *Ariana;* Port. *Oriana;* Sp. *Achiote;* Sw. *Orleana.*

A bright orange-red dye or colouring substance obtained from the pulp found in the seed-pod or capsule of the Arnotto tree, *Bixa orellana* of Linnæus, an evergreen shrub eight or ten feet high, and sometimes growing to some twenty feet high, bushy from the root and forming a single stem, very common in Ceylon, tropical America, Jamaica, and other parts of the West Indies, and has been successfully introduced into many tropical regions of the Old World, but it is chiefly prepared in Brazil and Cayenne. Its leaves are heart-shaped, dark green on upper side, and light green streaked with red veins on under side. Its flowers are either of a rich crimson colour or white, and grow at the end of the young branches in clusters. The fruit-pods also are heart-shaped, about an inch long, red coloured, and covered with stiff prickles, containing thirty to fifty small seeds like raisin stones, the seed, or *Achiote*, as it is called in America, being embedded in a reddish-yellow waxy pulp, which, after the pod is either rubbed or crushed in a tub of water, settles to the bottom. This sediment is then strained, boiled to a paste and dried to the stiffness of putty. In Cayenne, it is then formed into cakes or flags of bright yellow colour, firm and soft to the touch, and

weighing two or three pounds each, wrapped in banana leaves, and packed in casks for exportation. Sometimes the seeds, as taken from the pod, are gathered, simply dried, and exported in bags, especially from Jamaica. In Brazil, the paste is refined and made up into small rolls of 2 ozs. or 3 ozs. each, hard and brown outside, but of a beautiful yellow inside. The real colouring matter is a combination of *orellin* (yellow) and *bixin* (cinnabar red). It is not soluble in water, but is freely soluble in ether, alcohol, or volatile and fixed oils, giving them a brilliant orange colour. Alkaline solutions darken, and sulphuric acid turns it blue. Aniline colours are now used in place of annatto for many purposes.

Annatto, as met with in the English market, is generally mixed with carbonate and sulphate of lime, starch, flour, chalk, salt, red earths, turmeric, gypsum, or other cheap substances, but these must scarcely be termed adulterations, some mixture being requisite to adapt it to its various uses. Pure annatto should not contain more than six per cent. of ash. For quality the Ceylon product takes the lead. The organic adulterants may be easily detected by the microscope. Annattoes have been found adulterated with red lead, which is highly poisonous. Annatto is used largely by dyers, painters, varnish makers, and soap makers, and when good, forms the most popular colouring, odourless and tasteless, for butter, cheese (see *Edam cheese*), also for tingeing cream ices, etc.; ½ oz. to 1 oz. being sufficient for 1 cwt. cheese. The Spaniards put it in their chocolates and soups. *Liquid Annatto* or *Solution of Annatto* is easily made by boiling equal weights of flag annatto and pearl-ash with water, and diluting to the colour required. Some recommend 10 parts good annatto and 12 parts of pearl-ashes, with 78 parts of water. The South American Indians colour their bodies red with annatto. As a medicine it is slightly purgative and stomachic. London market prices for flag annatto vary from 4d. to 1/8 per lb.; seed, 3d. to 6d. per lb.

Anthracite (See also *Fuel*).—A black, brittle substance used as fuel. It occurs chiefly in transition formations between the strata of the clay-state and of the grey-wacke. It burns with a feebly luminous but smokeless flame, does not soften in the fire, but often crackles and decrepitates. It owes its superiority to other fuel to its cleanliness, hardness, and smokelessness. Used chiefly in lime-burning, brick-burning, also in salt works.

Anti-fat. — A widely advertised preparation, seems to be a fluid extract of the common seaweed, *Fucus vesiculosus*, known as sea-wrack, bladder-wrack, or lady's wreck. It is acknowledged to be very efficacious, owing either to the iodine the plant contains or to its gelatine neutralising the digestive fluids of other foods.

Anti-febrine.—A proprietary article lately introduced as the sovereignest thing for febrile affections.

It appears to consist of 75 per cent. of ordinary anti-febrine, 17·5 per cent. of bicarbonate of soda, and 7·5 per cent. of tartaric acid, but is offered at about six times the price of anti-febrine.

Anti-Ferment. —A useful preservative for cordials, etc. It is a strong aqueous solution of sodium salicylate, and contains a large proportion of acetic acid, but no boric acid.

Anti-Rust. — See *Vaseline*, *Polishes*, etc.

Antiseptics.—(From Latin, *anti*, against; *septos*, putrid; or *septikos*, putrescency).—A collective term for a crowd of preparations, simple and compound, which have the property of preventing or arresting the decomposition of foods, or of preventing fermentation and putrefaction. They do not entirely prevent decomposition, but rather permit stale goods to be made presentable. *Boric Acid*, *Formic Aldehyde*, or *Salicylic Acid*, *Alcohol*, *Sea Salt*, *Creosote*, and *Camphor* are all antiseptic. On the other hand, Disinfectants are supposed to destroy infecting spores. Antiseptics may, however, be considered to some extent as Disinfectants.

Of course there are many other Antiseptics, such as *Perchloride of Mercury*,

Carbolic Acid, *Chloride of Lime*, etc., but these, being exceedingly poisonous, are not to be admitted among food preservatives.

An objection to the use of Antiseptics is that they prevent the natural digestion of foods after they have entered the stomach, and refrigeration is considered the best method to adopt.

Anti-Sour.—A preparation for preserving aerated beverages and cordials. An ounce is sufficient for four gallons of syrup. Wholesale prices, 3/6 to 4/- per lb.

Antour or **Autour.**—A kind of bark brought from the Levant, resembling cinnamon in shape and colour, but is thicker and somewhat paler. It is used in preparing *Carmine*.

Ants' Eggs or **Ants' Brood.**—A natural and esteemed food for birds, poultry, fishes, etc. Price, in bales of 1 cwt., about 120/-.

Ants' Brood is an article of import in some of the northern countries, probably for making *formic acid;* dissolved in water, they serve the purpose of vinegar in Norway.

Apollinaris Water. — An alkaline and strongly effervescent mineral water derived from the Apollinaris Brunnen, a mineral spring in the valley of Ahr, in the Rhine province of Germany.

It is extremely rich in carbonic acid and very popular for table use.

The bottles and jars are all filled and sealed at the spring to prevent fraud.

Appalachian Tea. — Obtained in North America from the plants *Viburnum cassinodes* or *Prinos glaber*.

Apparatuses and Utensils of Trade. — See *Shop Fittings*.

Appetitsild. — A Norwegian preparation of boned and skinned anchovies put up in tins, wooden barrels, or kegs. It is not cooked or sterilised like salmon, lobster, or sardines, but is simply cured by salt and spices, much in the same way as herring or mackerel, and will keep good from season to season. Although generally packed in small tins, as being more convenient for table use, an air-tight package is not at all necessary. The blowing of the tins, so ominous in ordinary cooked foods, is, in the case of appetitsild, a good sign of ripeness.

Apples. — A. S. *Appel;* Dan. *Able;* Dut. *Appel;* F. *Pommes;* Ger. *Apfeln;* It. *Mele;* Port. *Maçaa;* Rus. *Gabloko;* Sp. *Manzanas;* Sw. *Aple;* W. *Afal*. (See also *American Apples*, *Green Fruits*, etc.)

The fruit of the *Pyrus malus*, or apple-tree, which is cultivated almost all over the temperate zone, succeeding best in the colder parts of that region.

Without going back to the calamities traditionally attributed to its first appearance in human history (for it is asserted that the apple of the Bible was really a *quince*), it may be stated that it reached Europe from the East, the mountains of Asia Minor, and it seems to have been distributed in Europe mainly by the Teutonic race. It was probably introduced into England by the Romans.

The small, wild, and sour crab, or austere apple is supposed to be the grandmother of all our English apples. The acid of apples is called *malic* acid.

There are some five thousand varieties and sub-varieties of apples, and these are increasing yearly. Dr. Hogg has attempted a scientific arrangement according to the structure of the stamens, tube, capels, and sepals. Apple-trees are propagated by seeds, layers, grafting, and budding. As a rule all rough-coated apples are good for eating and smooth ones for culinary purposes. The "black spots" seen on the outside of apples are due to the presence of a fungus, and impoverish the fruit. Early windfall apples, if exposed for sale in so immature a state as to be dangerous to health, are liable to seizure. In planting good varieties should be selected; also size, appearance, free-bearing quality, and good constitution. The trees should be planted in pyramid form and worked on a paradise stock. They require fertile soil and sheltered situations, although some varieties are more hardy than

others, and thrive best in cold or exposed situations.

The ordinary crop grown in Great Britain averages about 90,000 tons, and the value about £10 per ton. The best and earliest baking sorts are the *Calvilles, Codlings;* the best for autumn use are the *Rennets, Pearmains,* and *Greenings.* Perhaps the most profitable cooking varieties grown in England are the *Bismarck, Ecklinville, Dumelow's Seedling, Gascoyne's Scarlet, Golden Spire, Lord Suffield, Newton Wonder, Potts' Seedling, Tower of Glamis, Warner's King, Wellington, New Hawthorndean,* and *Lane's Prince Albert;* the latter being the longest keeper.

The best for table use are *Orange Pippins, Golden* and *Ribston Pippins, Russets, Duchess of Oldenburg* (an early variety), *Devonshire Quarrenden*—King of *Pippins* (nice and soft when fully ripe; flesh nearly white, but with yellowish tint), *Kempster Pippin* (an orange or red-streaked variety with yellow flesh), *Worcester Pearmain* (a bright red coloured variety with beautiful white flesh), *Wykin Pippins,* and *Court of Wick;* but *Ribston Pippins,* renowned for flavour, are unfortunately becoming extinct in England, owing to the disease called "canker." The *Cox's Orange Pippin,* of orange or red-streaked colour, has a sort of Ribston flavour, aromatic and vinous, with firm flesh, and very juicy. The *Calville Blanche* is of large size, shape flat or corrugated, with broad and uneven edges which end at apex of fruit. *Court Pendu Plat*—This is a very flat-looking apple.

Russets are of very superior flavour; but being mostly dull of colour, the public require educating to appreciate them.

It is a common practice in farmers' orchards to allow grass to grow around the young trees, but it has been proved that this practice reduces the amount of the growth of the trees to one-eighth of that usual where the soil is kept open. There are also lots of old orchards in this country filled with worn-out fruit trees, many of them varieties which are of no value, while there are plenty of splendid varieties to replace them, but which it seems nobody's interest to plant and cultivate. The best kind for boiling to pulp for jam-making are the *Wellingtons* or *Goffs.*

Of *crab-apples* those from Siberia are the best; they reach England during September and October.

Highly-coloured apples are ordinarily soft and woolly.

French apples are usually very nice and mellow to look at, but generally too sweet, pithy, insipid, and juiceless. The crop is about 1½ millions yearly, and average value about £5 a ton; and large quantities are used for cider.

In Japan a kind of dwarf apples, about the size of peas, are cultivated on trees growing only about four inches high. It is a mistake to believe the early bloomers are early ripeners. Those kinds that keep the longest ripen the last. Apples are said to keep best and longest if stored in a cold atmosphere, say 32°F., merely requiring to be kept from frost.

No straw, hay, paper, etc., should be used, for it is apt to turn moist and mouldy and impart mustiness.

A good plan is to store them in a dry airy cellar, packed in alternate layers, with clean dry sand, in barrels. They also keep well on latticed shelves in a dry cool atmosphere, and choice fruit should be laid singly. The fruit room should not be shut up too closely before the apples have become moderately dry. They are often spoiled on shipboard by heat. Perhaps the most careful way to pack dessert apples for inland travel is to wrap each in paper, and then nest them in dried moss or wood wool.

When apple trees are heavily cropped, a third or even half may be gathered and sent to early season markets, and bring good prices, and those left on the trees then grow much finer than if all had been left to ripen. All wind-fallen or bruised apples should be kept by themselves and marketed separately.

Kitchen apples should always be thrown into cold water as soon as peeled and cut, to keep them white. If they should become discoloured a little lemon juice will make them right again. Over two million barrels and cases of foreign

apples, costing about a million sterling, and mostly of excellent quality, are imported yearly, chiefly from United States (see *American Apples*), Canada, and Cape Colony; but also from France, Australia, and New Zealand.

Tasmanian apples (mostly *Ribstons, New York Pippins, Bismarcks, Sturmer Pippins,* and *Barmains*) arrive in bushel boxes, holding 36lbs. to 40lbs. each, and we now receive from one to two hundred thousand boxes of these juicy sorts at a time when other supplies are either scarce or comparatively inferior.

The success of the apple trade of the colony is largely due to Dr. Benjafield, who went thither about nine years ago, and is now a large grower and exporter.

Thirty years ago there were very few beyond those grown in England, except some fancy kinds from France, and some of very inferior quality from Holland and Germany; but soon after that time New York began to send Newtown pippins, followed by other varieties; a few years afterwards Canada followed, and then Nova Scotia, until the supply from these sources last winter was 1,217,767 barrels.

With the advent of cool chambers they are now successfully brought from California, Tasmania, and South Australia, so that we are never without a full supply of fresh ripe fruit. The Australian, ripening as they do at Christmas-time, are very acceptable here as other supplies get short. The quantity from these three centres, all coming in cool chambers, now exceeds 300,000 cases.

Notwithstanding these foreign and colonial importations, many English farmers and landowners are ever ready to contend that there is no profit in orchards. Others say it is a result of our land system, which makes it nobody's interest to plant and cultivate fruit trees in this country.

The four greatest fruit-producing counties are Devon, Hereford, Somerset, and Worcester. Devon has the largest acreage under orchards, but it has made little or no progress of late years, and there are hundreds of orchards a disgrace to those who own or rent them. Not only is the fruit gathered and packed without care, but it is sent to market without regard to season. Good-keeping apples that should not be marketed till April or May are sold at any price, and consumed in the autumn.

The apples imported in 1896 were 6,177,192 bushels; declared value, £1,582,471.

Canned apples also are imported in gallon cans, which are packed six or twelve in a wooden case. Costermongers owe their name to the vending of the old Costard or Custard apples. Apple-tree wood is hard and heavy, and is much used by turners—mostly for making shoe-lasts, weavers' shuttles, and in machinery. It lasts a long time if kept out of water.

In cooking apples the skin may be easily slipped off by first pouring scalding water on them. Apples will cook in boiling water at a temperature of 212°F., and will bake at 225°F.

Early kinds of apples are invariably best when eaten direct from the trees, as they soon lose their freshness; but late apples are the most profitable to growers and speculators.

Apples and Apple Rings (*Dried* or *Evaporated*).—F. *Pommes Tapées.*

Both whole and ringed evaporated or dried apples are coming more and more into general use, and with similar fruits may, in the early future, considerably curtail the raisin and currant trade.

The Americans have, during the last twenty years, become such adepts in the art as to be able to convert every pound of fruit into a marketable commodity (see also "*Canned Fruits*"); and this, to a certain extent, makes the grower independent of seasons, situations, glut of markets, etc., for if the prices for fresh fruit are too low he may set to and evaporate or dry it and keep it for better prices.

In the drying process the apples are first pared, and if intended for rings, cored and sliced, these operations being rapidly performed by a little machine named the "Electra." The apples are then placed in water in which a little salt has been dissolved so as to prevent discoloration. They are also submitted to

the fumes of sulphur for a short time to fix the colour.

The fruit is next placed on a wooden tray with a fine wire bottom, which, in turn, is fitted into the drying machine, just above the furnace, where it remains about five minutes. Another tray is then filled, and takes the place of the first, which is thus raised higher in the machine; and so the trays take the place of each other until four of them are fitted into the machine. As soon as the fruit is sufficiently desiccated, it is removed and placed to cool before being packed in the ordinary way. The time occupied in thus drying apples is from two to four hours.

Plums and certain other fruits are usually dried at three operations, but apples are best done at once.

They make capital tarts and puddings after being first washed and then soaked in clean boiling water with a little sugar for a short time before being used.

A vast quantity of these are prepared in America. In some cases it is the custom to sort the fruit, and sell the best in a fresh state, and only dry the inferior or damaged portion. The best are of light texture, and arrive in cases of 25lbs. and 50lbs. nett weight; carriage and freight to Liverpool about 1/3 per 50lbs. Prices, 30/- to 40/- per cwt. Those of brown colour are considered old and inferior, and average 20/- to 30/- per cwt. A bushel of green apples produces 30lbs. of meat and 20lbs. of parings, core and refuse, and will yield about 6lbs. of dried apples and 4lbs. of dried refuse. The latter is sold for jelly-making. There have been absurd reports about American dried apples being poisonous on account of being dried on zinc wire grates, by which process the acid of the apple comes in contact with the zinc, but the amount of zinc absorbed is exceedingly small, and any danger to health groundless, yet the sale of such fruit is not allowed in Germany. Over twenty million pounds of dried apples are now exported by the United States every year, and Canada has also entered the field with excellent results.

Apples are also dried in France, especially in Touraine, and sold under the name of "*Pommes tapées*," but large quantities are imported from America for cider making.

In the Rhine districts apples (and pears) are commonly cut in pieces and strung on pack thread. They are then hung up to dry, and serve as vegetables to eat with roast meat, or with pancakes through the winter.

With persons of sedentary occupations the use of fruit is becoming a recognised necessity, and the trade in evaporated apples is well worth the attention of all retailers in large towns, and particularly in the manufacturing districts where fruit trees are scarce. Care should, however, be taken to see that the fruit has been properly dried. Some of the dried apples are but imperfectly cured, the manufacturers evidently looking more to weight than to perfect drying. Such fruit is apt to go mouldy soon and become useless. Sometimes old stocks of dried apples are steamed to give them a fresh appearance, but this renders them liable to turn sour in a short time. (See also "*Evaporated Fruit.*")

Apple Butter is made in America, by boiling six gallons of cider down to *one*.

Apple Champagne. — See *Temperance Drinks.*

Apple Jelly.—Take 20lbs. strong apple pulp, 1 gallon of water, 1 oz. powdered citric acid. Put the pulp and water into the pan, and bring them to a sharp boil; turn the whole into flannel bags, and strain the whole of the juice through. Return the juice to the pan, and to each gallon add eight pounds of Dutch crushed sugar; stir them well until the sugar is melted; when the syrup boils remove any scum which rises with a skimmer; continue the boiling until the jelly hangs to the skimmer in thick flakes; cool, and fill into clear glass jars or bottles.

Much of the apple jelly sold in America is made from the cores and parings, mixed with glucose.

Apple Wine. — The best is made from the purest and best cider.

To every four gallons of cider add 10lbs. of sugar. Put these proportions into a clean cask till about three parts full; leave it in a cool cellar or other place for two days without a bung. Then bung it, but leave a small aperture so that the gas of the fermentation may escape. Immediately fermentation ceases drive in the bung and vent peg tightly. It should then remain a year in store undisturbed.

Most of the apple wine met with is not, however, of the above origin, but usually consists merely of aerated water and sugar flavoured with the fruit essence.

Apricots. — Da. and Sw. *Apricos;* F. *Abricots;* Ger. *Aprikosen;* It. *Albicoccos;* Port. *Damascos;* Sp. *Albaricoques.*

The old English word was "Apricock," from the Latin word *præcox*, or early ripe. They are the fruit of the *Prunus armeniaca*, an African tree fifteen to thirty feet high. About twenty varieties grow wild in India, and several of them are cultivated in the South of England (especially in Kent and Surrey, on standard trees), also in France, Italy, and Turkey. The flowers, pinkish-white, precede the leaves. The trees will grow almost anywhere, but the least frost in February or March will kill the flowers and destroy all chances of fruiting. The fruit, which nearly equals the peach, is roundish in form, downy, yellow, or orange-coloured, and ruddy on the side next to the sun, and the flesh is yellow, but has a stone like a plum, pointed at one end and perforated so as to admit a pin.

Apricots keep fresh only a very short time, and are seldom preserved in this country. They were first brought into Europe by Alexander the Great, and first grown in England by a priest named Worl, in the time of Henry VIII. The fruit is less acid than most stone fruits. For culinary purposes it is used both green and ripe, and preserved in both these states; also candied, when ripe; and sometimes dried as a sweetmeat. The kernels are valuable and very like sweet almonds. Apricots are extensively grown in Turkey, Italy, and France, whence they are exported both in a dried and candied state.

Clermont-Ferrand is noted for its conserves and compotes; of English growths, the finest are the *Moorpark* and the *Breda*, but in France the most popular are the *Nancy* and *Triel* varieties.

Immense quantities of apricots, £20,000 or £30,000 yearly, are grown in Damascus, and form one of the principal exports, either dried whole or in paste. A black pigment, similar to Indian-ink, is prepared from burnt apricot stones, and a large weight of these latter is exported from Syria to Europe every year. Ship-loads arrive at Marseilles, where they are ground to oil for soap making. *Apricot kernels* are also a marketable commodity, and fetch about 36/- per cwt. *Tinned apricots* in syrup mostly come from the United States, and especially from California, where this fruit grows to perfection. They are packed in 2½lb. cans, price about 11/- a doz.

Fresh apricots for market are usually gathered as soon as well coloured and before they get soft. They are carefully packed in small shallow boxes, just deep enough to hold one layer, and with the sides and ends lined with lace-edged paper, standing up about half an inch so as to fold over the fruit and form a fringe.

Paper shavings, wood wool, or dry, clean soft moss is used on the bottom to raise the fruits to an even level, and some blue or pink tissue-paper is placed between the moss and the fruit, so as to leave the upper surface bare when the box is opened, without disturbing the fruit. A sheet of clean white paper being placed over the fruit, the fringe turned down, and fitting evenly and tightly without crushing the fruit, the lid is affixed lightly with one, or at most two, tacks at each end.

Apricots for preserving should be evenly coloured, but not soft, when

gathered. Soft apricots travel badly, and only keep sound three or four days.

Apricot Jam, Marmalade, Pulp, etc. — The jam is now chiefly made from the tinned apricots or pulp from France, Spain, the Cape, Australia, and California. The former variety, particularly those grown in the neighbourhood of Bordeaux and in the valley of the Rhone, are considered of the finest flavour, but the Spanish varieties possess the richest colour. The gelatinous properties of each are about equal, so the quantity of sugar required for each is the same. A good jam is made of 20lbs. pulp, 15lbs. crushed sugar, and 8lbs. glucose, but if the apricots are very ripe no sugar is needed. Some makers use twice this quantity of glucose, and add a dozen pounds of apple pulp. The foreign fresh pulp is usually to be had in 10lb. tins, at about 20/- per cwt., from London dry fruit merchants. This re-boiled up and jarred sells well and profitably. The kernel or almond is usually taken from the fruit stone, skinned and split and added to the jam or marmalade.

Apply to C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Aqua Fortis. — A name in old chemistry for *Nitric Acid*.

Aqua Vitæ.—Literally the "Water of Life." A Latin term often applied to brandy, or a favourite ardent or unflavoured spirit of any kind. In Scotland it is whisky, in Ireland usquebaugh (whisky), in Holland geneva, in France *eau de vie* (brandy).

Aqua Vitæ was a term first given by the Genoese to the alcohol distilled from grain.

Arabian Tea.—Obtained in Arabia from the plant *Catha edulis*, natural order Celastraceæ. The name sometimes used for Abyssinian or Kaat tea, and occasionally for Algerian tea.

Arabic Gum or **Gum Acacia.**—Arab. *Samagh arabee;* Du. *Arabische gom;* F. *Gomme arabique;* G. *Arabische gummi;* It. and Port. *Gomma arabica.*

The name of the most valuable class of gums which contain *arabin* and exude spontaneously in a liquid state from various kinds of the Acacia tree, such as Kordofan, Turkey, Senegal, Talka, Cape Morocco, or Barbary. The world's supply may be said to come from the Soudan, the chief market being Khartoum. Taken on barges to Cairo in bales of 500lbs., it is shipped to London, Marseilles, New York, etc., to the extent of some 18,000 bales a year.

It hardens by exposure to the air, and is largely employed in medicines to hold in suspension insoluble drugs, also in giving lustre to crape and silks, and for making the best qualities of gumdrops, jujubes, etc.

The various gums known as Gum Arabic differ very much, and not only do the gums from different countries differ, but those from one country vary considerably according to the nature of the season. It is said the largest quantities are obtained in the hottest seasons and from sickly trees.

The best Arabic Gum is that obtained from the African *Acacia Vera*. It is of whitish yellow colour, transparent, very brittle, often cracked on the surface, and frequently met with in a broken or powdery condition, the result of its long land carriage in Egypt. No gum comes from Arabia now, so that all sorts of things nowadays are sold under the name of gum arabic, and it is growing more and more difficult to obtain the genuine free from adulteration. Dextrine is largely used as a "cheapener," and the powdered gum is frequently additioned with absolutely worthless substances. The price being a guide, the buyer should not feel hurt if he discovers that the so-called gum Arabic is an Australian gum resin closely resembling the real article, but the latest substitute carries the thing a little too far. It is said that a mixture of sugar candy, milk, and soda water-glass is sold in lumps and powder, and is a perfect imitation of gum Arabic.

Special Firms—M. E. Holdsworth, 3 Norfolk Street, Bradford; C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Arachide or **Arachis Nuts.** — See *Ground Nuts.*

Arachis or **Ground Nut Oil.** — A fine bland oil, pale yellow or greenish yellow in colour, obtained from Arachis or Ground Nuts, which yield 20 to 40 per cent., equal in quality to olive oil—which indeed it often represents, and is also extensively used in soap-making. It has a faint nut-like odour and a bland nutty taste, specific gravity 0·916 to 0·918. It becomes turbid at 37·4°F., and solidifies at 23°F.

Large quantities are prepared at Marseilles, Bordeaux, and Nantes, also in London. But more is made in Germany than anywhere else, Hamburg, Mannheim, and Heibrunn turning out an immense amount.

New works for the expressure of this useful oil are being opened up in several other towns, Trieste, Antwerp, Liverpool, etc.

The nuts are first cleaned, then decorticated and winnowed. They are next crushed, put into bags, and subjected to cold pressure, and finally the expressed oil is refined by passing through filter bags. A bushel of nuts pressed cold will yield a gallon of almost colourless oil, and a second quality of darker, if heated. The prices vary from 19/- per cwt. for Madras pale to 44/- for Rufisque.—Apply to C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Arakan Rice (also spelt Aracan and Arracan).—A low-priced rice imported from the Arakan Hill range, a long and narrow strip of territory about 400 miles long by 15 to 80 wide, in Lower Burma, in the Bay of Bengal.

Araki. — An Egyptian liquor prepared from grapes. (See *Arrack.*)

Archangel Ox-Tongues. — Ox-tongues from Archangel, the chief commercial city and province in the North of Russia and Siberia, on the White Sea, which is only clear of ice in July, August, and September. Wholesale prices, 12/- to 18/- a dozen. In buying these tongues care should be taken that they are real ox-tongues—not tongues of old cows, horses, etc.

Archil. — See *Orchella Weed.*

Areca Nuts or **Betel Nuts.**— (See also *Betel.*)—F. *Noix d'arec.*

These are the fruit of a tall, straight, and slender species of palm tree, known as Pinang, and the *Areca catechu*, or Cabbage Palm, which grows thirty to forty feet high in Malabar, Straits Settlements, Philippines, Ceylon, and Sumatra, whence thousands of tons of the nuts are exported yearly to China and other countries. A single tree yields 200 to 800 nuts. In India it is said that 100 million people chew them every day.

The areca nut is of orange colour, pear or egg-shaped, about the size of a walnut, very hard and smooth outside, but rough and hairy inside; and the kernel is about as big as a nutmeg, to which it bears a strong resemblance inwardly as well as outwardly.

They are usually chewed by the natives after preparation with chalk or lime and the leaves of the Betel Pepper (*Piper betle*) hence often called *Betel Nuts.*

The fresh nuts have intoxicating properties, and produce giddiness; in fact, some trees possess these properties to an unusual extent, and even retain them when dry; but the red nuts of commerce have undergone a process of baking and heat which diminishes their intoxicating property. The charcoal is used as tooth-powder. Present value of the nuts on London market about 12/- to 20/- per cwt.

Arge Beer. — See *Beers.*

Argentina Cheese and Butter. —Argentina in South America is essentially a grazing country, but until about 20 years ago, cheese and butter of home manufacture were almost unknown there, and the inhabitants had to depend on foreign importations.

This is now partly changed, and the Republic has become an exporting country, to the extent (1896) of 490 tons of butter and 61 tons of cheese, and the business seems likely to extend rapidly.

The custom prevails in Argentina of allowing the calf to run with its mother in the open pastures, and cows require

to be tamed before they will submit to daily milking.

There are two large dairy farms milking 1,200 and 1,500 cows per day, besides receiving large quantities of milk from outside farms. They turn out ¾ to 1 ton of excellent butter per day, and employ steam milkers and the most improved apparatus and machinery. Eggs also can there be bought retail in November at 6d. and 7d. per dozen.

Argol (also spelt Orgal and Argall). —Du. *Wynsteen;* F. *Tartre;* G. *Weinstein;* It. *Spa;* Lat. *Potassium Bitartrate;* Port. *Tataro;* Rus. *Winnui kamen;* W. *Gwin-gên.*

A hard crust of unrefined or *Crude Tartar*, which forms on the insides of wine casks, vats, and bottles, from grape-juice, white, reddish, or greyish, according to the colour of the grapes. That obtained from white wine is *white argol*, and that from red wine is *red argol*. It consists of tartrate of lime, potass, and earthy matter. When dissolved, purified, and again deposited, it is called *Cream (or Crystals) of Tartar*. It is largely imported in thick, hard, shiny lumps from France, Spain, Portugal, and Italy, but the latter, and especially that coming from Bologna, is best.

Argol is used extensively by dyers in preparing stuffs to take the required colours, and forms the basis of the ordinary *Cream of Tartar* and *Tartaric Acid* of commerce. It should be thick, hard, bright, and not too earthy; the white is preferred to the red on this account.

Armenian Bole. — A pale red earthy mineral, or silicate of aluminium, found chiefly in Armenia, but a similar substance is also found in some other parts of Europe. There is, however, no such thing as true Armenian bole in this country, and has not been for the last 150 years. What passes here under that name is a fabrication.

It contains a quantity of red oxide of iron, and is now extensively prepared by grinding together a mixture of whiting, red oxide of iron, and red ochre in nearly equal proportions. An inferior article, made of a mixture of Venetian red and chalk, is often sold in imitation of this ferruginous substance.

Several savage tribes in South America eat *bole* to allay the pangs of hunger, and the Javanese eat small cakes of it, called "tanaampo," to make them grow thin.

It is used largely in tooth powders, also in colouring articles of food, such as anchovy essences and pastes, tomato sauces and conserves.

Arnatto. —See *Annatto.*

Aromatic Cachous.—F. *Cachous aromatises.*

Mouth lozenges for chewing after smoking, to sweeten the breath; originally composed chiefly of catechu and sugar, flavoured and perfumed with strong aromatics, but nowadays the catechu is frequently omitted, and they are prepared in two ways:—

1. 3 oz. extract of liquorice, 40 drops of clove oil, and 10 drops oil of cassia, mixed and made into pills of 1 or 2 grains each, and then neatly silvered.

2. 2 oz. extract of liquorice, 1 oz. sugar, 1 oz. vanilla, 30 drops oil of peppermint, mixed with mucilage and divided.

Aromatic Vinegar. — F. *Vinaigre de quatre voleurs;* Lat. *Aceticum aromaticum.*

A pleasant and volatile excitant generally put on sponge and fixed in vinaigrettes or smelling bottles. It may be prepared from either acetic acid or alcohol, perfumed with certain strong scents or essential oils, such as camphor, oils of cinnamon, cloves, lavender, rosemary, bergamot, neroli; sometimes the dried heads of wormwood, sage, mint, rue, garlic, are also employed, a little spirit being necessary to extract the perfume and make it keep better. It is also known as *Marseilles Vinegar, Vinegar of four thieves,* and *Camphorated Acetic Acid.* It owes one of these names to the story that four thieves preserved themselves by its use from contagion while plundering dead bodies during the plague of Marseilles. A drop

or two of this odoriferous liquid overpowers, but does not really destroy, bad smells. It is very corrosive, so should not come in contact with the skin or clothes, and, being extremely volatile, should be kept closely corked. This vinegar is very good for fainting fits and headaches. It is also sold liquid in small phials.

Arracachas. — The tuberous roots of an umbelliferous plant, botanically identified as *Arracacia esculenta*, which is native to the Northern Andes. It was introduced into this country about 1846, as a substitute for the potato, but the English summer seemed too short for it, and it did not succeed, although it is largely cultivated and eaten in Venezuela, New Granada, etc., and is naturalised in Jamaica, also in the East Indies.

Arrack or **Rack.** — Da. *Arrack;* F. *Arac;* G., Du., and Sw. *Arrak;* It. *Arack;* Rus. and Sp. *Arak.*

A generic name of Oriental origin for spirituous liquors of all kinds, generally colourless, procured either by distillation of palm wine, sap of date shoots, or a fermented infusion of rice, and sometimes made from ordinary fermented grape juice. When well made it is clear, transparent, with a slight straw colour, but in England is only used to flavour "punch."

Goa and *Colombo arracks* are made from the sap, "toddy," or fermented juice of the cocoanut palm (*cocos nucifera*), and procured by incisions, especially by the Cingalese, who have long regarded it as their native drink. There is much illicit distillation, but the Ceylon Government derives considerable revenue from the use of this intoxicant.

Batavia, Java, and Jamaica are made from molasses and rice, with a little toddy. The famous Batavian product is prepared by Chinese from rice, slightly flavoured with cinnamon and anise, and closely resembles the best rum. North Indian is made from molasses only.

Algerian Araki.—The Arabs of Algeria manufacture a kind of spirit which they call *Araki*, from dried figs.

Tungusian arrack is made by the Tartars of Tungusia from sour mare's milk, fermented and then distilled twice or thrice between two earthen vessels closely stopped, the liquor escaping through a small wooden pipe.

Batavian arrack is considered best, then Madras, and that of China, if old, fully equals any other. A factitious kind, sometimes called *Vauxhall Nectar*, is made in this country by dissolving 23 grains of flowers of benzoin (benzoic acid) in one quart of good pale Jamaica rum.

In the East the consumption of arrack is very large, and it is one of the principal products of Ceylon.

Arripa Spirit.—See *Cashew Nuts.*

Arrowroot. — Da. *Salep;* Du. *Pijlkruid;* G. *Pfeilwurz;* Sp. *Maranta.*

A dry, powdery, and nutritive starch, used as a food; made from the pith of the roots of any of the plants of the type *Maranta.* The genuine is *Maranta arundinacea*, a native of South America, but now grown largely in the West Indies, Bermuda, and Port Natal, also in East Indies, under the name of *Maranta indica*, and from *Cwicuma angustifolia.* The arrowroot now grown in Jamacia is said to be almost, if not quite, equal to that of Bermuda. It is cultivated in much the same way as potatoes. The ground being ploughed, harrowed, and laid out in drills about 6 inches deep and 3 feet apart. In these drills the roots are set about 8 inches apart, ploughed over, and harrowed. Bermuda arrowroot owes its superiority mainly to the extreme care and cleanliness used in the different processes of manufacture. (See *Bermuda Arrowroot.*) Other qualities come in large quantities from East Indies and Natal in Africa, each importation taking the name of the place whence it comes. It is said to owe its name of "arrow-root" to the Indians using it to absorb the poison and cure wounds inflicted by poisoned arrows. The plant is a perennial herb, easily propagated by parting the roots. It grows two or three feet high, with branching stems, broad

pointed leaves, and small white flowers. It contains a large amount of farina, and, when pure, forms an agreeable and nutritious food for children and infants.

These fleshy roots when a year old are about a foot long, and as thick as one's finger. They are dug up, washed, peeled, grated or crushed between rollers, and strained through a sieve and the fibrous parts thrown out. The pulp is then washed repeatedly, the milky top liquor left to settle, and the water afterwards poured off. The white starchy sediment is placed in cloths to dry, then boxed or filled into barrels lined with paper fastened on with arrowroot paste, and exported. Adulteration by potato or tapioca, flour, sago, *Tous les mois*, and other fecula is easily detected by the microscope. *Potato Starch*, or *English Arrowroot*, may be distinguished by the greater size of the particles, their coarser and more distinct rings, and their more glistening appearance. *Sago flour* may also be detected by its truncated extremity, and by its irregular and tuberculated surface. Arrowroot is also adulterated with rice starch, and with the common starch of wheat flour.

Natal Arrowroot.—For very many years arrowroot has been cultivated on a small scale in the vicinity of Durban. The Buttery family commenced the culture of arrowroot about 1860, and, as may be supposed, the process adopted in the early days was of the most primitive description. While to-day the root is crushed in a mill driven by a four-horse-power hot-air engine capable of turning out a ton of arrowroot flour a day, the whole business at first was done by passing the roots between a pair of rollers, turned by the ever-necessary kaffir. Later, horse-power was substituted for natives, and to-day the whole mill is driven by an engine which pumps up the water supply from the Umgeni, while it works the crushing mill. Mr. William Buttery cultivates about twenty-five acres of arrowroot annually, and considers three-quarters of a ton of prepared arrowroot a fair average return to expect from each acre. For this prepared arrowroot he receives 3d. a pound wholesale, which represents not more than a penny profit on each pound sold. And as this penny, owing to the introduction of maizena, cornflour, Mellin's food, and a host of other similar articles into the market, is a diminishing quantity, readers will well understand why the cultivation of arrowroot in Natal is confined to about two farms, and is on so small a scale. Although Mr. Buttery's mill is capable of turning out a ton a day of the prepared article, as a matter of fact he finds it useless to produce more than about twenty tons of arrowroot per annum, and this may be easily understood when it is known that the total annual consumption of arrowroot in Natal is only three tons, and that Johannesburg with its enormous population only takes a little more than half a ton annually; the rest has to be exported to England, and, with the keen competition it meets in this country, it only realises a moderate price. Mr. Buttery raises arrowroot much on the same lines as a crop of potatoes. The bulb is planted in rows about eighteen inches apart, and fertilised with kraal manure. From the land the roots when ripe are carted to the mill, and after being first thoroughly washed are submitted to the crushing process. A constant stream of water plays upon the rollers as the roots pass between them, and it is this water which, passing through a great number of sieves, each one finer than the last, contains the arrowroot proper. From the crushing mill and sieving trays it runs in to a number of large vats, and is there allowed to remain undisturbed until the arrowroot has precipitated itself, when the water is run off through the sides of the vats. From the bottoms of the vats the arrowroot is then collected with spades and put into fresh vats, where it is thoroughly mixed and washed with filtered water, and allowed again to settle, after which the water is once more run off. The arrowroot is at the bottom of this vat in a block twelve inches thick. This block is found to have a thin coating of sand and gritty material on its lower side, pure, clean arrowroot in the centre, and a slightly discoloured sur-

face on top. The upper and lower surfaces are scraped off, and the centre, having been dried and bleached in the sun for about four days, is crushed by a slight blow from the hand, when it assumes the shape and appearance common to the ordinary nursery article, which most of us have consumed.

When good, arrowroot is a light opaque white powder, insipid and inodorous, and will keep many years in a dry place. When it is rubbed between the fingers it produces a slight, crackling noise, something like new snow being pressed into a snowball, and when mixed with boiling water it swells up into a consistent jelly. Arrowroot is less apt to become sour during digestion than any other farinaceous food, hence its use for the sick and delicate. When pure, arrowroot is perfectly soluble in cold water, but if adulterated a starchy sediment results. There should be no froth when boiled.

East Indian Arrowroot or *Curcuma Starch* is obtained from *Curcuma angustifolia*, or narrow-leaved turmeric. *British* or *English Arrowroot* is the starch obtained from the potato, as already stated.

Otaheite Arrowroot or "*Pia*" is obtained from the tubers of *Tacca pinnatifida*, and is also known as *Otaheite Salep*, *Tacca Starch*, and *South Sea*, *Madagascar*, or *Tahiti Arrowroot*.

This is a perennial herbaceous plant, with a tuberous root. As a source of arrowroot the plant is of great value. The tubers when fresh resemble new potatoes, and contain a great deal of starch. Tacca arrowroot is preferable to any other in cases of dysentery and diarrhœa.

Portland Arrowroot is from the underground tubers of *Arum maculatum*, or wake-robin.

Brazilian Arrowroot is merely Cassava starch or tapioca-meal from *Manihot utilissima*, known also by the native names of "*Moussache*" (French) and "*Cipipa*."

Florida Arrowroot is obtained from the root of a wild plant resembling the soapweed.

In commerce the word "arrowroot" is now often loosely used as a generic term to indicate any white, tasteless, and edible starch, or fecula; but the Adulteration Act really limits the name "*arrowroot*" to the pure pith of the marantas.

Arrowroot is imported in tin cases, barrels, or boxes, carefully closed up, but is often repacked in smaller boxes and packets. Bermuda, the dearest, is mostly imported in original casks of 100lbs.; St. Vincent, in 200lb. casks; Natal, in cases of 125lbs., and in 7lb. and 14lb. tins. This Natal root (although a variety of *Maranta arundinacea*), first imported in 1853, is only very inferior, usual price 2d. to 3d. per lb.; while Bermuda is worth 1/- to 1/6 per lb.

Gardner's Patent "Rapid" Sifter and Mixer, freely used for above. Prices from 50/- to £100. Catalogues from Wm. Gardner & Sons, engineers, Gloucester.

Arrowroot Importers—Morris & Jones, Sir Thomas Street, Liverpool; Pure Cane Sugar Co. (J. Philip & Co., agents), 4 Fenchurch Buildings, London, E.C.

Arsenical Soaps.—Some of these are saponaceous preparations for use in stuffing birds and small animals, to preserve skins from natural decay and from the attacks of insects.

They consist of soap mixed with a little arsenious acid or commercial arsenic. There is, however, no standard, and some of these soaps sold for toilet purposes contain no arsenic whatever. As outward applications for the skin, arsenious powders, soaps, etc., have long been popular among fashionable ladies for producing temporarily an increased brilliancy of the complexion, but if arsenic is present they can now only be sold by registered chemists (see "Poisons Act"), and if the soaps contain no arsenic the purchaser is prejudiced by not getting what is asked for.

Artichokes. — Du. *Artisjok*; F. *Artichauts*; Ger. *Artischoken*; It. *Carciofano*.

A corruption of the Armenian word *ardischauki*. The plant is not a dis-

tinct species but a derivative of *Cynara Cardunculus* or *Cardoon*, and is classed as *Cynara Scolymus*, closely resembling a large thistle-head, hence the term "Globe" artichoke. The Cardoon grows wild, but the artichoke is not found anywhere in a wild state. Each head consists of (1) the *leaves*, (2) the tender inside called *choke*, and (3) the *bottom* of each scale or solid white part, called by the French "*Fonds d'Artichauts*." These thick fleshy bases or "Fonds," with the pappus of the innermost florets, are the most toothsome portions, and are dried and also preserved in tins. The tender heads, gathered before the expansion of the flowers, are boiled and eaten with oil, butter, or gravy, and seasoned with salt and pepper. They are also sometimes dried for use in winter.

The plant is of Greek origin, a native of Asia, and both the Greeks and the Romans called it *Cynara*. It may also be called a maritime plant, for it loves proximity to the ocean, and was introduced into England about 1570. Its roots are perennial, its stems annual, and it is usually propagated by suckers. There are two popular varieties: (1) the *Conical* or *French*, "*Artichaut Vert de Laon*," which is of a milky green colour, with the scales spreading; (2) the English "*Crown*" or "*Globe*" *Artichoke*, which has its scales tinged with purple curved inwards, and closely folding over each other. *Drumhead* is the best. Those grown in Naples and Campania are considered the largest, tenderest, and best flavoured, also the most fruitful; then come the French. Spanish artichokes grow dark purple, tall, and upright, with the buds hidden from view. Sometimes they are nearly black, but the further north they are grown, in rainy, foggy climates, the violet colour entirely disappears, and is replaced by green or grey-green. It grows on an erect flower stem, two or three feet high, is considered a great dainty, and frequently eaten raw. Indeed, all parts of the early plant are pleasant eating—roots, leaf-stalks, stems, and flower heads. The better varieties are the least prickly. The roots are said to be somewhat purgative. In cultivation it requires great care, and it does not appear to grow well in this country. Artichokes are better after being gathered two or three days, and the heads are usually cut with a stalk and a neighbouring leaf, before the purple flowers expand. They are in season in July, August, and September. In France two crops are raised, one from spring buds in May and the other in September, but the spring growth only is eaten raw. To eat an artichoke gracefully is a rather rare accomplishment. Knives and forks are useless, and not only are the fingers soiled, but a heap of debris left on the plate is often disagreeably suggestive of a midden heap. (See also *Cardoons* and *Jerusalem Artichokes*, etc.)

Artificial Manures. — See *Fertilisers*.

Arva or **Kava.** — See *Ava*.

Asbestos (also known as *Amiantus*, *Amianuthus*, and *Mountain* or *Earth Flax*).—F. *Amiante*; G. *Asbest*; It. and Sp. *Amianto*.

This is a variety of hornblende. It is a soft, fibrous, yet crystalline and incombustible, metallic substance, often used for spreading over the burners of gas stoves in order to form incandescent radiation. This wonderfully silky earth-flax is mined in Italy, Canada, and in several of the United States. It is also found in various parts of Arcadia and Europe and in Scotland and Cornwall, but Italy and the province of Quebec are the only sources supplying commerce. The ancient Greeks used to weave it into an indestructible cloth.

The name "Asbestos" is itself derived from a Greek word signifying incombustible, or inconsumable; and "Amianthus" is also from a Greek word meaning unstained, or undefiled.

It has been called a mineralogical vegetable, and is certainly one of the most marvellous productions of inorganic nature.

There are several varieties. They contain a considerable percentage of silica and magnesia in their composition,

and are of various colours, whitish, greyish, greenish, brownish, and black. The flexible and elastic fibres of asbestos being quite incombustible, renders it very useful for lamp wick, paper, firemen's clothing, ropes, and packing for steam joints. It is also recommended for roofing buildings. In 1861 the roofs of Kingsford's Oswego starch factory were covered with asbestos, which is still in good condition. The wealthy Romans ages ago used it as a shroud in which to fold their dead previous to placing them on the funeral pyre, in order that the clothes might retain the ashes of the corpse. Pliny relates that he has seen soiled napkins made of this substance thrown into the fire, and better cleaned by it than by washing.

When required for the making of cloth, lamp-wick, etc., the crude substance is first soaked for a long time in warm water, and afterwards opened and divided, in order to separate the earthy parts which are whitish, like chalk, and serve to bind the fibrous parts together. This operation is repeated six or seven times, with fresh water, still opening and squeezing the mineral, till all the loose particles are washed out. Then the flax-like parts are laid out on a sieve to dry. When thus cleansed it is carded gently, and then reeled, being kept, at this stage, moistened with oil.

Ashes.—An old trade term for the common wood ashes or other alkaline matter obtained by burning wood, seaweed, and in lime or otherwise; used formerly by housewives to soften water. (See *Potash*, *Pearlash*, etc.)

Asparagus or **Sperage.** — Da. *Asparges;* Du. *Aspersie;* F. *Asperges;* Ger. *Spargeln;* It. *Sparago;* Port. *Aspargo;* Rus. *Sparsa;* Sp. *Esparrago.* This well-known and succulent vegetable, *Asparagus officinalis*, often vulgarly miscalled "grass" or "sparrow-grass," is a perennial root and has annual stalks, which are cut off when they are six or more inches above the ground for culinary purposes. There are two kinds of asparagus—green and the bluish-red or violet; the former is much the better flavoured, but the latter, being more showy and larger, is preferred by gardeners, who vie with each other in producing monster heads. Some kinds are armed with strong prickles. Asparagus is raised from seed, and grows best in a rich, fresh, sandy soil. Large quantities are grown in the beautiful vale of Evesham in Worcestershire, also at Deptford and Mortlake in Surrey, where hundreds of acres are devoted to its cultivation. Most of the sticks cultivated in France and Holland are blanched nearly their whole length, and for export are packed in cases of two dozen square tins, 2lbs. to 5lbs. each, and in long tins containing from twelve to sixty sticks in each. Argenteuil, near Paris, is famous for this vegetable, and immense quantities are grown in that locality. The choicest quality, *Pointes d'Asperges*, are packed in 1lb. tins. Broken sticks are generally packed in 1lb. tins for soups, etc.

Like tinned peas, tinned asparagus is very liable to contamination with the lead contained in common kinds of tin. A single dose of this mineral poison taken into the system may not be fatal, but taken frequently serious effects have resulted.

Asparagus is not of much value as a food, but very delicate and delicious in character, also easily digested, but it imparts a very disagreeable odour in the urine of some persons. It seems strange that English farmers do not grow and tin it, as well as market it in bunches. It is very popular in France, and the grocers there sell large quantities, done up in bunches of a kilogramme (2¼lbs.) each. No other vegetable retains its flavour so well after preserving.

It is often substituted by or mixed with the young stalks of artichoke, alisander, cardoon, rampion, sea-kale, and burdock (*Articum Lappa*), that well-known plant from which children often gather the burrs to throw at each other for the fun of seeing them stick on their clothes or hair.

Very excellent asparagus now comes from Bouldon Island, California, where

the soil and climate seem admirably suited to its cultivation. Years ago it was discovered that the overflow and tule lands along the coast and river islands in the Central Western part of the State were specially suitable for the culture on a large scale. Both climate and rich soil united to produce crops in quality and quantity unsurpassed in any other part of the world. It is easy to can, "handles" well, and is not easily bruised or defaced; requires the simplest of preparation and cooking, and keeps its fresh appearance. In 1888 only about 120,000 tins of 2½lbs. were sold during the season, but in 1898 about two million tins were advantageously disposed of, and large new asparagus farms are still being started.

The beds are not cut after June 10th, and are planted so that new areas come into bearing every year. Great care seems to be taken in the selection, for the quality is very high, and each tin contains spears of grass alike in size, tenderness, and flavour, besides being uniform in weight. The best is the "peeled white." A shilling tin is sufficient for three or four persons, and can scarcely be distinguished at table from fresh asparagus.

Asphalt. — A mineral pitch from Trinidad, France, and Switzerland. (See *Pitch*, *Manjak*, etc.)

A vast and inexhaustible deposit remains practically untouched in Venezuela, but one lake, that of Guanoco, in the State of Bermudez, is now being operated by an American company.

Aspic and Aspic Jelly. — Ger. *Gewurz-Sulze.*

Aspic is a savoury dish, composed of game, fish, hard-boiled eggs, etc. Sometimes it is made from calves' feet, a knuckle of veal, ham, onions, carrots, and savoury herbs, flavoured with sherry or tarragon vinegar. *Aspic Jelly* is a savoury jelly of an amber colour extracted from the succulence of meat or from gelatine, and is used as an exterior moulding for decorating or ornamenting cold game, hams, tongues, raised pies, galantines, poultry, fish, etc. The jelly being of a light transparent nature allows the article which it covers to be seen through it.

Assam Tea. — See *Indian Tea.*

Assarabacca or Cephalic Snuff. —A preparation of assarabacca leaves mixed with scented snuff, and considered very good for clearing the head.

Asses' Milk. — Very sweet and easily digested. Often ordered for delicate children and invalids, because it contains only a very little of that indigestible milk constituent known as *casein*, and also less than one per cent. of cream or fat, whereas cows' milk contains twelve to twenty-four per cent. of fat, and human milk about three per cent.

Assmannshauser Wine. — Produced in Germany on the banks of the Rhine about three miles from Rudesheim. The quantity is small, but the quality is the best of the red varieties of Hock, and it was famed as far back as 1108. Good vintages fetch £5 to £10 per aum (about 41 gals.).

Asti Wine — One of the best qualities of sparkling wine produced in Italy, and called after the northern province of Asti.

Astral Oil. — See *Kerosene.*

Atkinson's Infant Preservative. —Appears to consist of carbonate of magnesia 6 drachms, white sugar 2¼ oz., oil of aniseed 20 drops, sal volatile 2½ fluid drachms, laudanum 1 drachm, syrup of saffron 1 oz.; with caraway water added to make up a pint.

The use of such drugs has been severely condemned by many medical authorities, coroners, etc.

Atora Beef Suet. — See *Hugon's Refined Beef Suet.*

Attar of Roses. — See *Otto of Roses.*

Aubergine. — See *Egg-plant.*

Australasian Butter.—The growth of the butter exports from the Australian colonies has been quite remarkable. In 1889 the exports to Great Britain

amounted to about £6,000; in 1890, to £35,000; in 1891, to £106,000; in 1892, to £265,000; and in 1893, to £547,000. During 1894 the imports reached over 11,000 tons, chiefly from Victoria, *viâ* Melbourne.

The butters generally arrive here in square boxes of 56lbs. net. They should be consumed in a few days after leaving cold storage or the flavour suffers. The disagreeable flavour noticeable in some of them is attributable to the fact that colonial salt has too often a bad mineral taste, and that this imparts to the butter the unpleasant flavour. Colonial dairymen are, however, beginning to use English salt—at all events for butter to be sent here. There are several factories in operation which buy their milk at sixpence or sevenpence a gallon, and the Government is doing its best to promote the business. The colony of Queensland has now become a regular exporter of butter to Great Britain. This butter has competed on fairly favourable terms with the produce from Victoria, New Zealand, and other colonies. It is well liked but sometimes lacks the uniformity of quality so important in the British market. However, with lower railway rates in the colonies and lower freights to this country, there are possibilities for great extension of the trade in these butters. The selling of the finest brands of Australian and New Zealand butters that come into England is now mainly in the hands of Geo. Wall & Co., Ltd., Liverpool and Manchester.

Australian Moss. — This has been introduced for the same uses as Irish, Ceylon, and other mosses, but has not been very generally adopted. It is prepared by soaking half an ounce of the moss in water for an hour or two; the water is then poured away and the moss boiled in a quart of fresh water till dissolved. It is finally strained through a hair sieve, sweetened, and flavoured to taste.

Australian Tea. — Also called *Tasmanian* or *New Zealand Tea.* These are mere substitutes for tea, and consist of infusions made from various species of tea-trees (ti-trees) of the myrtle order growing in the above countries, sometimes as shrubs, 1 to 12 feet high, but often as trees 40 to 80 feet high.

Custom-house returns show that the inhabitants of Australia and New Zealand consume per head more of genuine imported tea than any other people outside China.

Australian Tinned Mutton.—F. *Mouton;* G. *Hammelfleisch.*

Most of the tinned mutton comes from Australia, where sheep are very plentiful and cheap; it is said there are thirty sheep to each inhabitant, while in England there is scarcely one. The prejudice existing in this country, especially among the working classes, against Australian mutton, although not so prevalent now as it was a few years back, is, however, very absurd. It should be remembered that the first sheep in Australia were sent there from the finest English breeds in 1809—to feed convicts, it is true, but that was not the fault of the sheep. Others argue that the grass is of poor quality because the soil has not been properly tilled, and that the result is the mutton is not so satisfying unless a man eats about one-third as much again of it as of English mutton; but the sheep feed in Australia on natural grasses and in the open air, and, as a consequence, their flesh has a flavour and strength superior to that of the artificially fed animals of this country—and far superior to the scraps and remnants of inferior or diseased animal food sold by unscrupulous farmers and butchers in all our large towns. In Australia there is little temptation to tin bad stuff. Every year thousands and sometimes millions of sheep are boiled down for their tallow only, which realises about 4/- a head, and even the best raw meat costs only about 1d. per lb., but the tinning costs 2d. to 6d. per tin, according to size. A 2lb. tin of this mutton may be said to be equal to 3lbs. of raw butchers' meat. In comparing the economy of tinned mutton with butchers' fresh mutton, the relation of bone to the meat is important. The average weight of the bone in a leg of mutton is 1lb., a shoulder of 7lbs. also

contains about 1lb. bone, and as the bone is not eatable, it adds 1d. or 1½d. per lb. to the cost of the meat.

How prepared.—The tins are filled with about 2¼lbs., 4½lbs., or 6lbs. 10 ozs. of raw mutton without bone. After the mutton is placed in the tin the top is soldered on, and a small hole left in the centre. The tins are next placed on a gridiron in a bath of salt and water, called the chloride of calcium bath; and the bath is heated to a temperature of 220°, afterwards to 230°, and finally to 260°, the time occupied being about three hours. This last is a temperature of 48° hotter than boiling water, and is said to be necessary to remove all the air and life germs; every little cell containing air and water is broken up, and the steam and air escape at the small hole, which is suddenly closed with the soldering iron, all the elements of decomposition being thus removed. The tins are put aside to cool, when the external pressure of the atmosphere often forces the top into a concave or battered shape, but the tins are never reopened until the meat is required for the table. A portion of the flavour escapes with the steam, and most of the *osmazome*, upon which the flavour of the meat depends, has been separated by the boiling, but, while the flavour of the mutton is somewhat injured, the flavour of the jelly is increased.

Short Weights.—The *Melbourne Argus* gives a hint to English consumers: "Complaints have reached us from home that tins of Australian meat are sometimes not exactly up to weight, and some are as much over weight as others are under. It must be at once admitted that Victoria meat preservers find it difficult, if not impossible, to achieve perfect uniformity in the weight of their tins. The same weight of uncooked meat, put into cans of exactly the same dimensions, will sometimes turn out, when ready for the market, some few ounces above or below 6lbs., or 4lbs., or 2lbs., as the case may be. The manufacturing practice is to put 6lbs. 10 ozs. of meat into the 6lb. tins; 4lbs. 7 ozs into the 4lb. tins, and 2lbs. 4½ ozs. into the 2lb. tins, in order to provide against the loss of weight which occurs during the cooking process, and this generally is ample, the tins when finished proving rather over than under the intended weight. Some manufacturers let the over-weight tins go for the weight they were intended to be, and sell those of less weight, be the deficiency ever so slight, as if ¼lb. short.

"Others charge for excesses as well as allow for deficiencies. On one point the European consumer may rest assured—the Australian meat preserver never intentionally sends out his tins deficient in weight. He has nothing to gain and much to lose by such a practice. An ounce or two of mutton is nothing to him, whereas to permit his manufacture to fall into discredit would be utter ruin."

A considerable quantity of tinned mutton is also now put up in the United States.

According to a statement in the *Adelaide Observer* (1895), the total number of sheep in the world is estimated to amount to 555 millions, and nearly one-third are of the fine woolled "Merino" breed.

Of these 555 millions,	Millions.
River Plate has	135
Australasia	125
Russia	68
United States	38
United Kingdom	32
South Africa	26
Spain and Portugal	25
France	20
Germany	15
Turkey and Persia	15
Hungary	10
Italy	8
Roumania	8
Austria	5
Other countries...	15
	555

For tinned mutton, apply to Morris & Jones, 13, 15, and 17, Sir Thomas Street, Liverpool (also proprietors of the "Southdown" brand).

Australian Wines. — The first grape vine in Australia was planted at

Castle Hill, near Sydney, in 1791, by Colonel de la Campe, a French emigre. The first grape vine near Parramatta, a few miles from Sydney, and famous for its orangeries, was planted in 1801. After the fall of Napoleon in 1815, Mr. John Macarthur, a spirited colonist, while in Europe, obtained a number of cuttings of the finer varieties of vine, but the London nurseryman to whom they were entrusted for despatch to Sydney, substituted others of an inferior kind. The trick was not discovered until several years afterward, the soil and climate of the colony being in the meantime blamed for the failure of the experiment. In 1825 cuttings of the Muscat and Madeira varieties were sent to Sydney and thrived splendidly. Other cuttings followed, but the British Government refused to grant passages to Continental vine dressers, and it was not until 1844 that such men found their way into the colony. Thenceforward the progress of vine cultivation was rapid, and with its increasing spread the production of wine became a recognised industry. In 1861 there were in New South Wales, Queensland, South Australia, Victoria, and Western Australia, 7,009 acres under vine cultivation; in 1896 the area had become increased to 58,642 acres, the product being 5,606,035 gallons of wine, 7,901 gallons of brandy, 63,665,280lbs. of table grapes, and 2,145,360lbs. of raisins. The grapes grown in New South Wales are equal in size and flavour to the finest grown in Continental Europe, but both their cultivation and the production of wine from them remain imperfectly developed as a whole. In 1897 the area under wine cultivation in the colony was 8,061 acres, producing 794,256 gallons of wine, 7,134 gallons of brandy, and 6,462,400lbs. of table grapes. The raisin manufacture is still one of the industries of the future in New South Wales. In 1893, with 462 acres less under cultivation than in 1897, the quantity of wine produced was 931,542 gallons. Most of the vineyards are of limited extent, but several are of large size. They are scattered over the whole of the colony, save on the more elevated tablelands and in the sub-tropical regions. There are over 2,000 vignerons in the colony, the most successful being Italians, Germans, and Frenchmen, or individuals having some practical knowledge of vine cultivation as practised in Europe. The colony offers an unlimited field for enterprise in this direction, there being many thousands of acres eminently adapted for vine cultivation remaining unutilised. It has been stated by a leading authority that New South Wales is more favourably situated for raisin production than is any of the other colonies, and that when the industry has become introduced and firmly established a large intercolonial and export trade may reasonably be anticipated. Of the 16,695,560 gallons of wine imported into Great Britain in 1896, only 6,394 gallons were from New South Wales, most of that produced in the colony being locally consumed. Such is the abundance of grapes, mostly the black varieties, in the colony, that during the season they are retailed at 1d. per lb. in Sydney, the finest muscatels bringing from 3d. to 6d. per lb. In the vicinity of the vineyards they are cheaper still.

The increase of vines in the different colonies in 1892 was:—Victoria, 26,443; South Australia, 15,418; New South Wales, 8,264; Queensland, 1,908; West Australia, 1,218—total, 53,251. Victoria now produces nearly half the wine made in Australia. In South Australia a large number of Germans are employed in the industry of wine making, but the best Australian products are still scarcely equal to the second class of French wines. The best which Australia produces is one called *Cwarra*, which much resembles a second-rate Rhenish wine.

Other Australian kinds are:—

Tintara (described elsewhere).

Muscat of Alexandria, a white wine.

Hocks, from the (1) Chasselas Grapes, (2) Auldana Reissling, and (3) Porphyry.

Sparkling Verdeilho Champagne, *Burgundies* from Hermitage, Golden Fleece, and White Burgundy.

Gouais.

Carbinet, a soft wine, like Burgundy.

Mataro.

ALKANET (see page 34).

ANISE (see page 47).

ARROWROOT PLANT (see page 57).

ARTICHOKE (see page 59).

Sauvignon.

Kaludah, an elegant dinner wine.

Singleton Red, or White *Hermitage*, noted for its refinement.

Tokay Imperatrice.

Verdeilho, of a delicate aroma and full body; colour, partridge-eye; with 20 to 30 per cent. alcohol.

Frontignac, a thin, white wine, with a kind of elderberry body.

Malbec, made from the claret grape, and contains about 23 per cent. proof spirit.

White Adelaide, an exquisitely pure wine from Riessling grapes.

Red Adelaide, a kind of Burgundy, very hot, but of mild flavour.

Tavoora, a kind of port with about 27 per cent. alcohol.

Chasselas, a poor and acid variety.

Highercombe, like Sauterne and strongly scented.

Wattlesville is acidulous and of no particular quality, the cheaper kinds being mousy and vinegary.

In 1892 South Australia produced about a million gallons, and exported about 325,000 gallons.

The production and export of wine for 1897-8 are interesting at the present time. The balance reserved for home equals 1¼ gallons per head of total population. The British imports of wine equal 14,000,000 gallons altogether.

	Production. Gals.	*Export. Gals.*
New South Wales	864,514	43,413
Queensland ...	207,945	980
South Australia ...	1,283,094	526,689
Victoria	2,750,000	346,030
Western Australia	120,000	156
	5,225,553	917,268

Thousands of acres of vines are being planted in Australia, looking to the London Market as an outlet for the wine in future years.

Austrian Wines.—Some of these are very good, but not very widely known.

The principal kinds produced are:—Steinberg, Voslauer, Auspruch, Tokay, Menos, Buda or Ofen, Carlowitz, Œdenburger, Muscat, Szamarodi, Erlauer, and Giberwein.

Ava, Arva, Kava, or **Yava.**—A favourite and intoxicating beverage with the inhabitants of the Samoan, Friendly, Fiji, and other islands in the Polynesian group.

It is derived from the roots of the plant *Macro-piper methysticum*, which is closely allied to the pepper family.

In some places the natives merely chew the root, which has aromatic and pungent qualities, add water to the result, and this, by fermentation and straining, produces intoxicating beverage.

In South-Eastern Asia the leaves of the plant are chewed with *bêtel*.

In the Colonial and Indian Exhibition, 1886, a spirit was retailed at the refreshment bars which was distilled from the roots of the Kava plant. It was sold under the name of *Kava Schnapps*, or *Yangona*.

Avena Flakes or **Flaked Oats.**—*Avena* is the Latin name of the oat genus of plants, hence Avena Flakes is simply a fancy term for crushed, rolled, or flattened oats.

Avignon Berries.—See *Yellow Berries*.

Avocado or **Alligator Pears.**—(sometimes called *Aguacute* or *Midshipman's Butter*).—The fruit of *Laurus Persea gratissima*, grown in tropical America, in Florida, and in some of the Atlantic Islands. In Madeira, where large quantities are grown, the tree attains a height of 20 to 30 feet, and forms a tree of tall, slender growth, with smooth green laurel-like leaves. The fruit, which is shaped like a large pear, grows in clusters, the number of fruit in a cluster varying from three to five; when ripe, they assume a dark purplish-green colour, and each fruit contains a large globular seed, around which, and connected to the very thin skin, is the pulp or edible portion, which, in some of the French colonies, is known as "*Vegetable Butter*."

The local name for the fruit in Madeira is "*Peara da Manteiga*" (butter-pear). The pulp has the consistency of butter, with a delicate nutty flavour. It is commonly eaten as a salad, seasoned with pepper, salt and sometimes a little vinegar, or the juice of a fresh lime. Others prefer to use it as a dessert fruit, with a little sugar. The fruits are in season from middle of September to end of February, and some are exported to London. They are gathered before quite ripe, and expected to mature afterwards. In Grenada these pears are always eaten in a raw state, with bread and butter or other things, according to taste. It is said that cats are very partial to them. In the West Indies, where it is much esteemed, the taste is rather oily and pastey, but it is considered an excellent fruit, and a fancy for it is soon acquired.

Awamori.—A strong spirit made in Japan from rice.

Axle Grease.—Made in several ways:—(1) Water, 1 gallon; soda, ⅓ pound; palm oil, 10 pounds. Mix by heat, and stir till nearly cold. (2) Water, rape oil, of each 1 gallon; soda, ⅓ pound; palm oil, ¾ pound. (3) Water, 1 gallon; tallow, 3 pounds; palm oil, 6 pounds; soda, ½ pound. Heat to 210° F., and stir until cool. (4) Tallow, 8 pounds; palm oil, 10 pounds; plumbago, 1 pound. Makes a good lubricator for waggon axles.

Ayapana Tea. — Consists of the leaves of *Eupatorium triplinerve*, or better known, perhaps, by its older name, *E. ayapana*. The plant is a native of tropical America, where it has long been used, particularly in Brazil, as a sort of panacea, or domestic remedy for everything.

This tea is very popular in the Mauritius, Java, Ceylon, India, and other tropical and sub-tropical countries wherever it has been introduced, and is considered very good as a stomachic tonic in indigestion.

Ayer's Pills.—Sold in long wooden boxes, each containing twenty-five pills, composed of pepper, colocynth, gamboge, gutti, and aloes, and covered with sugar and starch.

Ayer's Hair Vigor.—A solution of 0·6 per cent. of lead nitrate.

B

Baba. — G. *Polnischer Kuchen*. A sweet cake made with yeast and raisins.

Backstein Cheese.—A Continental make, containing water 37·4, fatty matter 30·6, casein 28·5, and salts 3·5.

Bacon. — (See also *Bath Chaps, Brawn, Hams, Lard, Pigs, Pork, Sausages, Rolled Bacon, Sugar Cured Bacon, etc.*)—Da. *Flesk;* Du. *Spek;* F. *Lard;* Ger. *Speck;* It. and Sp. *Lardo;* Pol. *Slonnia;* Port. *Toucinho;* Rus. *Solo;* Sw. *Fläsk;* W. *Baccun, Cig moch.*

Bacon is the sides, belly, and forelegs of the pig, cured and dried.

In England, the counties of Cumberland, Yorkshire, Hampshire, Berkshire, Somersetshire, and Wiltshire have long been noted for excellent bacon; and in Scotland, the counties of Wigtown, Dumfries, and Kirkcudbright. Ireland also cures and exports large quantities of splendid quality, especially of "*rolled*" *bacon* in bales; and importations of good Danish bacon have increased very much these last few years. But the largest quantity, the poorest quality, and the lowest priced comes from the United States. The cost of feeding in the U.S. and Canada (chiefly Indian corn) is very much less than in England, where, although there is no regular system, pigs are mainly fed on barley-meal, boiled potatoes, and separated milk. Bacon from maize-fed pigs containing much more *olein* than English dairy-fed has therefore a lower melting point and is much more wasteful in cooking (see *American Bacon*). Bacon curing in England is mostly done in winter. A moderate temperature is

best. If too hot and muggy, the meat spoils before the pickle has time to act on it; if too cold, the meat sets too stiff to allow the salt to penetrate. The curing may be done by rubbing well the hams and sides of the pig with a mixture of salt and saltpetre—say one part of saltpetre with fifty of bay salt. Some people also use as much soda as saltpetre, and the soda will correct acidity, but impairs the flavour of the meat. Others use a mixture of 4lbs. salt, 1lb. sugar, and 2¼ ozs. saltpetre. The sugar imparts a nice flavour, prevents hardness, and is a good antiseptic. A good rubbing is considered sufficient for the outer or skinny sides, but rubbing the fleshy side makes the surface too hard. It is then laid in a large trough, tub, or other suitable vessel, but so that the liquor may drain away, for, if permitted to soak into the bacon, it imparts a strong rusty or sea-pork flavour, very objectionable to most persons. The parts of the pig are laid in the vessel with the skin side down, and the inner, upper, or fleshy part is carefully covered with the dry-salt mixture, which should be changed every three days, or the salt will give a nasty taste. After lying 8 or 10 days in salt, the bacon is hung up in a dry and airy position to drip, dry, and harden, after which it will keep good any reasonable length of time in a proper situation. It has recently been stated that a sprinkling of hops in the brine when bacon and hams are put in pickle adds greatly to the flavour of both, and enables them to be kept an indefinite period. Smoked hams and bacon are best cured in smouldering oak sawdust, which imparts a very fine flavour, but the meat should remain in pickle about four weeks previously. Oversmoking brings on reastiness, but this is usually prevented by first dusting the meat liberally with peameal and oatmeal. (See "*Smoked Meats.*") Salt cured bacon should not be exposed too long to the air, or it may turn more or less rancid or rusty. It may be easily kept good and sweet by being placed in a box covered six inches deep with clean dry woodashes, and after placing the bacon in, adding another layer of the ashes on the top.

Irish and Danish are treated much in the same mid-cure method. The bacon, instead of the heavy salting and long hard-drying in vogue up to a few years ago, is only kept in the cellar about 10 days, and is just sufficiently cured to have a nice mild flavour without too much salt.

Bacon is also liable to the attacks of a small fly, the larvæ of which are called *jumpers*, or *hoppers*. To prevent the waste it is common to dust the fleshy parts over with a preservative composed of ten parts of flour, six parts of ground pepper, and six parts of powdered borax, well mixed together, and to tie the bacon in bags, or cover it in dry bran. It used to be a common practice to whitewash the flesh sides of bacon as a preventive of reastiness and fly-blowing. The modes of cutting up, curing, and using the several joints vary in different counties and districts. Sometimes the ribs are taken out before curing the sides, but this is a bad plan and allows the underlying meat to be afterwards impregnated with salt and air, and spoiling its taste. The ribs are not of much value when taken out, but of great service if left in, by forming a protection to the inside meat. Of "cuts" we have the *Cumberland* cut with the ribs and foreham left in. This cut sells well, and makes no waste. The Cumberland pig is killed and cured in the cold months of the year, and hung six or nine months in rooms for the purpose until wanted. It has, therefore, to be made very salty. *Wiltshire* cut is cured with both hams and the ribs left in, but the blade bone is taken out of the shoulder.

Auto-cured Bacon.—This is a new process, an automatic vacuum one, the brine by this method being forced into the meat in an incredibly short space of time, causing the bacon, which may have formed a living pig in the morning, to be perfectly cured bacon in the evening. (See "*Wiltshire Bacon.*")

Devonshire Method of Curing.—Draw away all the slime and blood from two hams by rubbing them well with salt for two days before they are put into the

pickle. Drain them, lay them in a pan, and pour over them, boiling hot, the following ingredients:—2lbs. of treacle, 2 ozs. of saltpetre, 1lb. of common salt, and 1 pint of good vinegar; turn and baste them every day for a month, then drain and smoke. Time to salt, one month.

"Sixes" is a term commonly used in baled bacon trade, and means that a bale contains six smaller sides to make up an equal weight of one with four larger or heavier sides. Good bacon has a thin rind, bright and red colour, and agreeable smell; the fat is firm, and of reddish tinge; the lean is tender, and while raw sticks to the bone. When the fat is yellowish it is rusty, or going so. Bacon exposed to strong light, as at shop doors, or in window, etc., loses colour and flavour very quickly. It also lends itself largely to evaporation, and the parings, scrapings, etc., necessary to keep a nice show are apt to result in serious loss unless carefully managed. As to fixing retail prices and weighing out, it is a necessary precaution for the provision hand to cut up a side now and then, weigh and reckon up exactly to see what he realises. It will be an excellent check as to the amount of profit or loss he is making. Bacon should be prepared from young and well-fed animals; it is then a very wholesome and palatable food; contains less water and loses less in cooking. Bacon forms a notable exception to most flesh meats in being more digestible when cured than when fresh. The best way to cook it perhaps is to toast or broil it in rashers in front of the fire; if fried in a pan it is stronger in flavour and less wholesome.

Altogether, Great Britain imports about £10,000,000 worth of bacon and hams yearly. Roughly, a quarter of the money goes to Denmark, nearly half to the U.S., and about one-fourteenth to Canada. (See also *American* and *Danish Bacon, etc.*) The terms "Wiltshire Cut" bacon, "York Cut" hams, "Cumberland Cut" bacon, etc., being well understood by traders, are considered permissible in wholesale quotations as denoting that the hams or sides have been cut or dressed according to the fashion usual in such counties; but for retailers to apply such terms to fractions of the meat is calculated to deceive consumers, and is, therefore, considered an offence under the Merchandise Marks' Act. English bacon-curers in buying and paying for pigs by weight usually claim 4lbs. per pig as waste, shrinkage, or difference which occurs in "cooling" or between killing and salting.

Special Firms.—Hillier's Bacon Curing Co., Ltd. (Wiltshire), First Prize Medal Brand, Newmarket, near Stroud. Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool. R. Rutherford & Co. (Canadian Bacon), 112 Whitechapel, Liverpool. George Wall & Co., Ltd., Provision Merchants, Liverpool and Manchester: Sole Agents for the celebrated "Royal Dane" and the "E.S.M." brands of Danish bacon; also the "Runic," "Wallflower," and "Walnut" brands of American Bacon; telegrams: Walsalls, Liverpool (see advt., p. 10.). Thomas Wilson & Co. (Irish Bacon), 3 Hood Street, Liverpool.

Badian or **Badiane.** — An Indian species of star anise; the fruit of a tree which grows in China, and identical with the European star anise fruit. The Chinese often use the Badian to give their tea an aromatic taste. (See *Anise*, p. 66).

Bael Fruit.—A popular product of Ceylon.

Bagasse. —A name for the crushed or exhausted sugar canes after the juice has been extracted. The same name is given in some countries to the *marc* of grape skins and olive refuse, after they have yielded their juice.

Bags. —F. *Sacs;* Ger. *Sacken.*

A great number of articles in commerce are sold by the bag, which means no more than that the bag, being made of a determined size, is supposed to contain a certain weight, which is generally taken in the gross, and without weighing, for the sake of expedition.

A bag of hops is from 2½ to 3 cwts.; of almonds, 3 cwts.; of aniseed, from 3 to 4 cwts.; of pepper, 1¾ to 3 cwts.;

rice, 1½ cwts.; cleaned, 2 cwts.; nuts, 178lbs. when new, or 154lbs. if old.

The dimensions of most kinds of foreign bags in use are:—

Australians	...	about 28 × 44 inches.
Bombays	...	,, 27 × 44 ,,
Chilians	... ...	,, 28 × 44 ,,
Calcuttas	..	,, 29 × 40 ,,
Beets	... ...	,, 24 × 45 ,,
La Platas	...	,, 22 × 40 ,,
,,	...	,, 24 × 40 ,,
Sugars	... ...	,, 26 × 44 ,,

Americans, made of cotton, are of 7 and 10 stone capacity; also made of jute, of 10 and 20 stone capacity.

Any of the above may be purchased in large quantities (new or second-hand) at Liverpool or any of our large ports.

Baillie's Pills. — See also *Patent Medicines.*

These seem to be composed of aloes extract, colocynth compound extract, Castile soap, and oil of cloves.

Bair Fruits. — The large egg-shaped fruit of the umbrella-topped Bair-tree (*Zizyphus*), very common about Delhi and other parts of India.

Baking Powders. — See also *Easteleine.*

These are substitutes for yeast in raising bread, or to save butter and lard in making cakes, etc. They are all mixtures of acid and alkali, which, on the addition of water, enter into chemical reaction and evolve carbonic acid gas. Hence they are commonly a mixture of tartaric acid, or cream of tartar, and bi-carbonate of soda; and to keep these dry or prevent their coming in contact and acting on each other before wanted for use, and also to cheapen the mixture, either arrowroot, potato flour, maize flour, or rice flour is generally added. Baking powders should be as nearly as possible neutral, and the ideal quantities of soda and acid to aim at are bicarbonate of soda 8½ parts and tartaric acid 7½ parts. Excess of alkali will also darken the pastry. An extra good baking powder might be made of 8lbs. bi-carbonate of soda, 5lbs. cream of tartar, and 2lbs. tartaric acid. The ingredients should be dried thoroughly before mixing, crushed fine, and passed through a sieve, and the baking powder be kept in closed vessels from the air as much as possible, and in a dry place. In drying tartaric acid and cream of tartar care must be taken to do it very slowly, and at a very low temperature, or too great heat will turn them a dark colour. A quarter of a pound of above is mixed by well sifting it with 12lbs. of flour before the milk and water is added, and then made up quickly and baked. The water liberating the carbonic acid gas, and puffing up the dough, the baking should be done before it all escapes. Acid sulphate of potash is sometimes used as a substitute for tartaric acid in cheap qualities of baking powders.

Weight for weight cream of tartar is not really any cheaper for baking powders than tartaric acid; for the latter having a much stronger neutralising power on the bicarbonate, it goes farther. Cream of tartar is used because it is more slowly soluble, and so causes the more gradual evolution of carbonic acid, which gives a greater porosity and lightness to the mass of dough.

BORWICK'S seems to contain a liberal proportion of maize-flour.

GOODALL'S appears to be a compound of two parts of rice-flour with one part of a mixture of tartaric acid and bi-carbonate of soda.

DELFORT'S resembles a mixture of 5 ozs. carbonate of soda; 1 oz. bi-carbonate of ammonia; 10 ozs. of *alum;* and 8 ozs. arrowroot.

HOSFORD'S (American) is a powder supplied in two packets. One contains an acid phosphate of lime and magnesia, mixed with flour; and the other bi-carbonate of soda with a little chloride of potash.

Best baking powders generally consist of tartaric acid, bicarbonate of soda, and rice flour. Here are a few recipes:—

(1.) A fair average quality would be 6 parts tartaric acid, 8 bicarbonate soda, 1 carb. ammonia, and 12 ground rice.

(2.) 6 parts tartaric acid, 8 bi-carbonate soda, 16 rice flour.

(3.) 20 parts tartaric acid, 27lbs. bicarb. soda, and 53 ground rice.

(4.) 8lbs. tartaric acid, 10lbs. bicarb. soda, 12lbs. rice flour.

(5.) For home use mix ¼lbs. carb. soda with 2½ ozs. tartaric acid or 1lb. cream of tartar, and 3lbs. rice flour; keep in a bottle well corked and dry.

(6.) 9 parts bicarb. soda, 8 parts tartaric acid, 10 parts rice flour.

(7.) 2¾ parts bicarb. soda, ⅓ part bicarb. of ammonia, 4 parts arrowroot.

(8.) 56 parts bicarb. soda, 28 parts tartaric acid, 112 parts potato starch, ⅓ part finely powdered turmeric.

(9.) 112lbs. ground rice, 50lbs. bicarbonate of soda 37½lbs. tartaric acid, and 2½lbs. table salt.

(10.) *A cheap one.*—20lbs. acid phosphate of lime (calcium), 29lbs. bicarbonate of soda, 30lbs. powdered starch; or,

(11.) 28lbs. of rice flour, 1lb. tartaric acid, 2lbs. carbonate of soda, and 2lbs. of finely-ground salt.

(12.) Sir H. Thompson recommends: 2 parts tartaric acid, 3 parts bicarb. soda, and 3 parts arrowroot, mixed and bottled.

(13.) A superior quality.—18 parts cream of tartar, 8 parts carb. soda, and 6 parts ground rice.

The only difficult matter, simple as it seems, in making baking powders is the thorough mixing of the chemicals. It is the main secret. Any one can easily put the ingredients together in the proportion desired, but very few know how to mix them properly, and fewer still know that it is necessary to mix them a long time before using. No baking powder is fit to use until the soda and cream of tartar or tartaric acid are so intimately mixed that there is not a particle of one without a particle of the other. The mixture must be a thorough chemical combination. This is why home-made baking powders, badly mixed and newly made, are disappointing and the commercial article praised.

The baking powders sold nowadays appear to be remarkably free from deleterious ingredients; the only doubtful substance met with being *alum*, employed instead of tartaric acid; and, as the majority of doctors and chemists consider it injurious, it should not be used. Anyone now (1900) selling baking powder containing alum or other injurious ingredient is liable to be fined. (See Food and Drug Act of 1899, Sec. 6; in conjunction with Sec. 3 of the 1875 Act.)

Baking powders may be made up of any materials the manufacturer pleases, so long as there is nothing injurious to health; but, from the foregoing, it will be noticed that tartaric acid and carbonate of soda constitute the chemical base, and that the correct proportions are 6 parts of the former to 8 of the latter, the amount of ground rice, rice flour, etc., may be added to any reasonable extent.

To detect alum: Put two teaspoonfuls of the powder in a glass of cold water. If it does not bubble or simmer it contains alum, and that prevents it.

Gardner's patent "*Rapid*" *Sifter and Mixer*, freely used for above. Prices, from 50/- to £100. Catalogues from Wm. Gardner & Sons, engineers, Gloucester.

John May, 114 *Church Street, Croydon*, packs, in various sizes, a baking powder of improved and reliable quality. (See advt. end of book.) It can also be supplied with customer's own name by an arrangement according to the system strongly advocated by Mr. Alderman Ireland, J.P., at the Grocers' Conference, 1899, as a preventative against "cutting." (See extracts from his speech, post free, from John May.)

Other Special Manufacturers.—W. H. Dawson, 66 Finsbury Pavement, London, E.C.—works, Great Yarmouth; The Easteleine Company, Newbury, Berks (see advt., end of book); Morris & Jones, 13 to 19 Sir Thomas Street; R. H. Poole, 126 Witton Street, Northwich, Cheshire; C. Windschuegl & Co. (ingredients for), 1 Leadenhall Street, London, E.C.

Balachong, Balachoug, or **Garum**—A paste or condiment of pounded or bruised small fish, used as a relish; a kind of *Caviare*, almost a necessary of

life with the Malays, Siamese, Burmese, and Cochin-Chinese, who use large quantities of it as a seasoning with their everyday food. The Greeks and Romans called it *Garum*. There are several kinds, but that most in use is made of a species of small shrimp, which is found in enormous numbers on the borders of the sea in that part of the world. The fish is salted and pounded in a mortar, then made up in small packets, and distributed all over the country. Inferior sorts are made of all kinds of small fish, such as prawns, sardines, etc.

Though fetid and offensive to strangers its preparation and distribution give rise to an extensive traffic throughout the East.

Balloon Yeast.—The trade name for one of purest and best yeasts made. Bakers who have not tried it should write to the Irish Distillery Co., Ltd., Connswater, Belfast.

Bamboo.—A kind of giant grass, from most of the tropical countries.

Balata Gum. — See *Naseberries.*

Bambarra Nuts. — See *Ground-nuts.*

Bananas or **Paradise Figs.**—(See also *Plantains.*)—F. *Bananes;* Sw. *Bananastrod.*

They are an important fruit of the banana tree, *Musa paradisidca*, a native of the East Indies. It is a developed *tropical lily*, now flourishing along with other relatives of the *Plantain* (*M. sapientum*) tribe throughout the tropical and sub-tropical regions of the world, and even does well in English hothouses. It is not really a *tree*, but an herbaceous plant of arboreal proportions, and closely resembles the fig tree; the soft spongy stem, although rising 15 feet to 20 feet high, being made up by the union or sheathing of its leaves as they grow. The leaves, of a beautiful emerald green, are from 3 feet to 6 feet long, and 2 feet to 3 feet broad; a kind of grass cloth is often made of them. When the leaves are at full, a large drooping flower-spike shoots out from their midst, and flowers of a rich pink colour appear; the upper or male flowers soon die, and exhibit no fruit, but the lower or female flowers rapidly change into a bunch of oblong shaped fruit. This is about nine months after planting, and for several weeks a certain number of bunches may be gathered almost every week. A "bunch" means the thick stem, around which may hang seven to ten "rings" of fruit in corkscrew fashion. The size, shape, and number of fruit in a bunch vary considerably; a very large bunch may weigh 100lbs. and consist of some 250 fruit, each fruit 4 inches to 12 inches long, by 1 inch to 1¾ inches in diameter, and finger-like or crescent shaped; but the bunches are generally under 50lbs., and perhaps average about 25lbs. each. This handsome and, to the negro, almost invaluable plant is probably the most prolific that grows. It forms one of the principal sources of food for the lower classes in tropical countries, and its productive powers are prodigious. It is said to produce 44 times more by weight than potatoes, and 133 times more than wheat. A single acre may yield 175,000lbs. yearly. No wonder Humboldt said nothing in the world would grow so much food to the acre as the banana. The fresh core yields about 40 per cent. of dry meal, and the ripe fruit is said to contain about 27 per cent. of solid matter. The nutritive value, however, is only minute, being about equal to that of the potato, and slightly inferior to rice.

Indeed, the chemical make-up of bananas and potatoes is strikingly similar, as will be seen from the following table:—

	Bananas	*Potatoe*
Water	75·71	75·77
Carbonaceous matter...	20·13	20·70
Albuminoids	1·71	1·79
Woody fibre	1·74	·75
Ash	·71	·97

If only a cheap practical process could be discovered for manufacturing banana flour, guaranteed against spoiling, an immense impetus to the industry would speedily result.

The young shoots and tops of the stems of the plant yield a juice used as an

astringent, and are also boiled and eaten as a vegetable, and the spongy pith of the stem also, when boiled, forms a nutritious food of a starchy character. In fact, soups, porridge, puddings, bread, cakes, biscuits, preserves, and mock apple sauce are all regularly made from bananas. They contain less water and more nitrogenous matter than most fresh fruits, and if preserved with vinegar, and afterwards pressed and fermented, they furnish a spirituous drink like cider or wine. They may also be converted into yeast.

In India they are only used when ripe, either as raw fruit or cooked in fritters. About 20,000 acres are devoted to banana culture in Jamaica by the smaller cultivators, and the exports from that island amount to some £500,000 a year, nearly all going to the United States. They are considered the best of keepers. The plants also serve as shades for other products. One kind of banana grown in the West Indies and Cuba has a red skin when ripe, but these are nearly all exported from Baracoa to New York.

The Hawaiian Islanders export largely to Canada, as well as to the United States. Large quantities are now being grown, and exported from the New Hebrides to Sydney.

One banana plantation in Cuba covers an area of over fifty square miles, and employs some 3,500 hands, but the luscious, bright, yellow bananas from Jamaica are much preferred to the large red growths of Cuba.

Considered along with the *Plantain* family, the varieties are very numerous, exceeding 150, and their gradations almost imperceptible. In fact, there are almost as many kinds of bananas and plantains as of apples, varying from a foot long to 3 inches or 4 inches, while some have a thickness almost equal to small musk lemons. The more mealy and sugarless kinds are called *Plantains*, and are often very large. These are never eaten raw except when ripe, but when unripe they are boiled and eaten as vegetables, sometimes fried in slices and often made into preserves.

The unripe fruit also is often dried in the oven, and may then be kept for a long time without spoiling. It is usually carried about in this state by travellers and natives, to be eaten in the manner of bread. The chemical reason why the unripe fruit is chosen for this purpose is that, while unripe the fruit is full of starch, and when dried resembles bread.

Bananas have generally spots on the stems with dark purple stripes, and the fruits are smaller and less curved than the plantain. The banana is also much finer and delicate to the taste, and is generally eaten raw. Many strange animals, insects, and reptiles come in banana bunches; snakes a yard long, tarantulas, and spiders of various species have been found in them. A plantation will bear all the year round. In Central America the fruit sells at about 1/- per bunch, whilst the plant itself would be worth ten times that amount to a soap factory, paper mill, or coffee bag manufacturer. The fibre, which extends the whole length of the plant, is capable of being divided into threads of silky fineness, and, with merely drying, is commonly used for shoe-strings, ropes, etc.

The leaf, with its stalk of the toughest and finest threads, serves the native women as an umbrella during the rainy season, also as a carpet to sit upon, or a bed to sleep on. It is curious how these valuable properties of this textile material have been so long overlooked by our manufacturers. Famine is unknown in banana countries.

When ripe, the skin is either red or of a bright yellow colour, but the bunches are mostly picked when green and hung up in a cool place. When the rind, which comes off easily, is removed, there is found a soft pulp like that of a fine pear, or even more luscious to some palates. But the fruit should be *ripe*.

The banana as a fashionable food in England makes comparatively slow progress. As commonly seen, it is rather an unattractive-looking article, and to some people is positively objectionable for its "candle-flavoured-with-weak-

pine-apple" taste. It was only about 1874 that they began to be sold in England, and came from Madeira.

As a medicine, it dispels constipation in children, and for adults has good effects in cases of acute indigestion. Bilious people are advised to eat the banana the first thing in the morning; but for all this, people in this country do not fly to it as a day commencer. So many things, such as salts, etc., have an early morning reputation.

Not everybody knows how to choose bunches of bananas. Look at the thick end of the branch on which they hang—if it be black the fruit will be black in a day or two, and will ripen too fast and rot. In one day they will be musty and scarcely fit to eat. But if the branch be green the bananas will ripen slowly and lusciously, and be of a good flavour. If all the stem be green the bananas will keep a long time, but if half or three parts of the stem be black it shows that its time is shortening. The biggest and handsomest are generally chosen by ignorant purchasers, but the smaller are the sweetest and juiciest, the tiny "Fig" banana being the best of all. The rind should be thin, and there should be no ridges or corners to it, the larger the ridges the coarser the fruit. All bananas contain starch while green, which upon ripening changes into sugar. They are therefore best when just turning yellow but still streaked with green. This handsome and valuable plant is rarely found wild, although some have been found in Ceylon, Cochin China, and the Philippines; these, of course, have seeds, but are much inferior to the long and seedless cultivated varieties. The banana, however, requires very little cultivation, all that is necessary being to remove the suckers, and plant these at convenient distances. They grow rapidly, and in ten or eleven months bear fruit, and afterwards continue to yield crops every six months for many years.

In Dutch Guiana banana trees are planted as a shade to the young cocoa trees, but as soon as these latter can bear the sun the banana is removed.

Two varieties of banana are generally grown in Madeira, viz., the dwarf and the "silver."

The dwarf (*banana aña*), or Chinese banana, is the kind mostly exported from there, the fruit being much larger and the bunches much heavier than the "silver" variety. The latter, however, is of a beautiful bright golden-yellow colour without any of the dark brown patches which usually disfigure the "dwarf" when ripe, is also much more delicate in flavour, although only half the size, but it is seldom exported.

Those who have once tasted the silver variety seldom use the dwarf, except for cooking.

Madeira bananas are mostly grown on the south side of the island. The season lasts all the year round, although the fruit is at its best from July to December; but the largest export is in winter, when fresh fruit is scarce in England.

Usually cut and packed while the fruit is green, it sustains very little damage in transit, and ripens by degrees.

Packed in large rough wooden crates, holding a dozen or more bunches, between each of which straw is placed to keep them firm and prevent their rubbing one against another. Another method is to pack in baskets made of a coarse native broom, one bunch in each basket, with straw or bracken leaves placed round them to ensure safety in transit.

The island of Grand Canary, however, probably supplies the most to this country, although one day further from England, and certainly occupies the first place as regards cultivation. The crop is ready 18 months after planting; there are usually 1,000 to 1,200 plants to the acre, and over 150 bananas to the plant with two harvests a year.

The exporting merchant commonly secures by contract the yearly crops of several growers, taking all fruits over a certain size.

In 1891 the price was about 1/10 per bunch, and in 1892 only 1/6, but the demand having increased, much higher rates now prevail.

The exporter cuts, packs, and removes the fruit as he pleases, usually wrapping the bunches in wood shavings and banana leaves, and packing in baskets.

When it is considered that each bunch contains 150 to 300 fruits or "fingers," and that many are retailed in England at a penny each, there seems a fair margin of profit for somebody.

When very green the bananas should be hung up in a warm room a day or two to ripen.

Grocers often miss profits by the way they display these fruit. They often deter purchasers by showing the worst sides of the bunches; for the average buyer is not attracted to bad-looking fruit by an idea that it is better than it looks. The best plan is to take the bunch, cut from it all the small and bad fingers, and place these in a separate heap to sell cheap. Then cut off the moderately good stock, and turn these best side up for sale at a better price. This leaves all the prime fruit, which will fetch a high price. Customers should always be allowed such a choice, and each may thus be satisfied.

Importers and Merchants.—J. Agate, 25 Wellington Street, Covent Garden, London, W.C.; Elder Dempster & Co., 20 Old Haymarket, Liverpool, and 46 Long Acre, London.

Banana Essence. — Usually made up of equal parts of butyric ether and amyl-acetic ether, dissolved in about 5 parts of alcohol.

Banana Flour or **Plantain Meal.** —A very nice flour for confectioners' use, and easily digested. It is made by desiccating the bananas or plantain fruits after depriving them of their sheath and then reducing them to powder. Mr. Stanley, the African explorer, highly recommends its use. It is used as ordinary flour for custards, puddings, blancmange, and is very nutritious as a food for infants and invalids.

Special Importers.—The Pure Cane Sugar Co. (J. Philip & Co., agents), 4 Fenchurch Buildings, London, E.C.

Banbury Cakes. — Banbury was famous for its cheese and cakes as early as 1586 (see First Edition of "Camden's Brittania"). The modern cakes are chiefly composed of a mince called "Banbury meat" enclosed in rich pastry, and then baked. They are usually cut either into oval or oblong form, almost pointed at each end, and are eaten cold. They were highly popular in the days of Ben Jonson (see his play "Bartholomew Fair"), and it is recorded that the first inventor was a man named White, who was such a strict Puritan that he "hung his cat on a Monday for killing a mouse on a Sunday." These cakes are now very similar to Eccles Cakes.

Take 1½lbs. of flour, 7 well-beaten eggs, 1 teaspoonful of volatile salts dissolved in milk, 1½lbs. of fine sifted sugar, 1½lbs. of currants. Mix the eggs with the sugar and whisk well together, then add the other ingredients, mould, and after brushing them over with the froth of eggs or other substitute, bake well on a flat tin in a hot oven.

Banbury Cheese. — A very rich dry sort with a thick rind, made at Banbury, in North Oxfordshire.

Bandoline.—Also known as *Fixature* or *Eau Collante*, etc. A kind of pomade consisting of any of the simple vegetable mucilages, combined with a little spirit to preserve it, and with a little perfume to render it more agreeable. It is often made by dissolving in following proportions, say 1½ ozs. pale gum-arabic in 3 fluid ozs. of pure water, and adding 2 fluid ozs. of rose-water. Some are made by boiling Iceland or Irish moss in water, then straining and perfuming the fluid; or by boiling for five minutes a tablespoonful of flax seed in 1¾ pints of water. They are all used for stiffening the hair, and fixing curls as desired.

Baneberries. — The berries of the Herb Christopher (*Actæ spicata*), a kind of crowfoot, native of the north-west of Yorkshire, where it grows wild. The berries are poisonous, but with alum they yield a dye similar to that of cochineal.

Bangalore Apples. — A small but very nice Indian variety about the size of billiard balls, and excellent when stewed.

Bannock Cakes. — In Scotland and the northern counties of England, *Bannocks* are thick flat round cakes made either of oat, rye, barley, or pea meal, baked on an iron plate over the fire, or on the hot hearth.

Barbary Sugar.—The finest sugar, which was formerly supposed to be brought from Barbary, before the trade of the West Indies was fully established.

Barbary Tea.—This consists of the leaves of the common box-thorn genus (*Lycium barbarum*), spiny shrubs, also known as the Barbary tea-plant and Duke of Argyll's tea-tree, etc.

It is said to yield an excellent beverage.

Barbe de Capucin. — See *Salad plants.*

Barbera Wine. — One of the most esteemed red wines of Italy.

Barberries. — The barberry or *Thorny-box* tree is a hardy perennial shrub, and is common in woods and hedges all over Great Britain. It flowers in May or June, and when in bloom it emits a powerful odour.

The fruit, *Berberis vulgaris*, which ripens in bunches in September or October, is very acid and of astringent nature, but the juice when diluted with water is very grateful to the taste—cooling, and of great benefit to patients suffering from fever.

There are several varieties—the red-berried (with stones), the black sweet, the purple, and the white. The seedless, *B. vulgaris asperma*, is mostly preferred for preserving purposes.

Formerly, barberries were held in great esteem by those acquainted with their virtues. The leaves, in salad, are applied for the same purpose as sorrel, and the fruit makes an excellent pickle, as well as a marmalade, jam, and jelly. Barberry Drops or French Drops, as they used to be called, also Barberry Comfits, made of sugar, flour, and gum, were far more commonly known years ago than they are now.

Barcelona Nuts.—(See also *Nuts.*) —The best and the most important variety of the common hazel nut, cultivated chiefly in Spain, where some whole districts are covered with nut trees, *Corylus avelland*, var. *Barcelonica.* They appear to be synonymous with our *Cob-nuts*—the husks shorter than the nuts. When gathered they are carefully dried in kilns and sifted into different sizes before exportation. Although popularly called *Barcelonas*, they are nearly all shipped from Tarragona, a more southerly port; upwards of 200,000 bushels are imported into England yearly. A bag of Barcelona nuts weighs about 128lbs. or 168lbs. barrel measure. They are usually cheapest to buy in England about the month of October, the new crop nearly always arriving in time for Halloweve (October 31st), which in many districts is the principal, if not the only, time there is a brisk demand; but if fresh nuts are late in arriving or are very dear, they are sometimes mixed with or substituted by old nuts, also with an inferior kind of nut, and this discourages the consumption. Spanish nuts are now imported in barrel-sacks, and the price is about 24/- per barrel-sack.

Importers.—Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool.

Barclay's Pills. — The Rev. D. Barclay's Antibilious Pills are said to be made from the following:—2 dr. extract of colocynth; 2½ dr. soap of jalap; 3 dr. extract of guaiacum wood; 8 grains tartar emetic; and 4 drops each of oil of juniper, carraway, and rosemary. The whole well mixed and divided into 4-grain pills.

Barilla. — (See *Soda.*)—The name of an impure soda, as imported from Spain and the Levant.

Barley. —F. *Orge;* Ger. *Gerstengraupen;* D. *Rijg;* It. *Orzo;* Sp. *Cebado;* L. *Ordeum;* W. *Haidd, Barlys.*

A hardy cereal, *Hordeum*, which extends over a wider climatic range than any of the other sorts of grain, and is perhaps the most ancient of the cultivated seed foods. It is grown extensively in the Midland and Northern counties of England and in Scotland, particularly

in the Lothians. Of late years large quantities have been imported from the Black Sea and other foreign countries, but these are much inferior for domestic purposes to the fine English and Scotch growths. Very little barley is grown in America, but in Spain and Italy two crops are obtained in one year. In England barley is used to fatten cattle, pigs, and poultry, or converted into malt for making beer, ale, porter, and British spirits; or partly deprived of its husky covering by a rasping or paring process in a mill, and so made into human food as *Scotch*, *Pot*, or *Hulled barley*, or when steamed, dried, and further rounded, and polished in the mill, *Pearl barley*—the latter itself being sometimes ground into a fine powder and called *Patent barley*.

There are several species of barley, but, like certain other plants that have been long in cultivation and been so altered thereby, it is not known what was the original wild form. *Hordeum vulgare* has around the rachis the grain in *four* rows. The *H. hexastichum*, or *six*-rowed, is the *bear* or *bigg*, grown as a winter crop in the North of Scotland; and *H. distichum* in *two* rows, which is the kind most commonly cultivated for malting. The lower part of the ear in the varieties ranked under *H. vulgare* is, however, often six-rowed, and only the upper part four-rowed, for in rich soils a tendency to resume the *six*-rowed is often noticed. A kind with naked seeds, called *Siberian barley* (*H. Coeleste*), is cultivated in some parts, but falls from the straw too freely and is wasteful. In England and Scotland barley generally follows turnips as a spring crop, but in Ireland it is usually sown as a winter crop. The word barley is from the old English *Boerlie*, which is from the Anglo-Saxon *Bere*.

About ten million quarters are grown in the United Kingdom, and about eight millions more imported yearly, Russia sending about five millions and Turkey two millions.

A bushel of barley weighs 50 to 54lbs., and an acre produces 28 to 40 bushels.

A barley-corn is a corn or single grain of barley, the third part of an inch; hence originated our measures of length.

Apply to Keen Robinson & Co. (manufacturers of *Robinson's Patent Barley*, in packets and tins), Garlick Hill, London, E.C.

Barley-bree.—A liquor made in Scotland from barley.

Barley-meal.—Is the grain ground whole. It is darker in colour but lighter in body than wheatmeal, and in 100 parts it has 79 of starch, 6 of gluten, 7 of saccharine matter, and 8 of husk.

It is cheaper, lighter in body, and more easily digested, but not so nourishing as that made of wheat. Barley-meal in the time of Charles I. almost entirely took the place of wheat as the food of the common people, especially in the north of England; and in some parts of Northern Europe it is still largely used in bread-making, and, mixed with a little *corn-flour*, it yields a very nice white bread.

Wheat-flour is often mixed with *barley-flour*, the latter being supposed to counteract the constipating effects of the former.

Barley-meal is sometimes adulterated with oat husks, apparently to increase the bulk.

Barley Sugar.—F. *Sucre d'Orge*.

A brittle confection of sugar, boiled rapidly and drawn into long yellow strips, more or less transparent and generally flavoured with lemon.

Originally it used to be extracted from an acid decoction of barley or barley-water, but this is rarely attended to nowadays.

The best white sugar, often mixed with glucose, is in the ordinary manner dissolved, boiled, and skimmed to the "hard crack," then poured ¼ inch thick on a slab, coloured yellow with saffron water, and while warm cut in strips ½ inch wide and curled by holding one end in each hand and twisting it reverse ways.

Barley-Water.—A mucilaginous decoction of Pearl or Scotch barley, and is considered a soft, lubricating, and invigorating drink—especially for invalids.

Take 2 oz. of pearl barley, wash it well, and boil for 10 minutes in a little water to clear it; when drained, put to it five pints of boiling water, and let it boil till reduced to one-half. Then strain for use.

Barley Wine. — G. *Malten-Weine.* A new wine, representing port, made from highly-fermented barley. First discovered by Pasteur, but first manufactured by Mr. Hansen, a Danish scientist; and now made and exploited by a factory at Wandsbek, near Hamburg. The barley is malted and carried to the point of fermentation, when lactic acid and vinous ferments are introduced into it, and it is then treated by sundry variations of temperature. When fermentation is completed, the new wine is put into huge vats and then into casks, where it is subjected to artificial maturing, by being raised to a high temperature. Barley wine is noted for its large percentage of alcohol, derived entirely from fermentation and not from added alcohol.

Barm.—See *Yeast.*

Barsac Wine.—A white French wine, known as one of the *Sauternes*, produced in the Bordeaux district.

Bartlett Pears. — A very popular growth of pears in the United States, originally known in England as *Williams's*, and in France as *Bon Chrétien.*

Barytes (pr. *bright' tees*). — F. *Barytes;* G. *Schwerspath;* Sp. *Barita.* The native sulphate of barium; a common name for the mineral *barite* or *heavy spar.* This ponderous earth is mined, ground in a mill, and often used to adulterate white lead, to weight paper, etc.

For prices, etc., apply to C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Basil or **Sweet Basil.** — F. *Basilic;* It. *Basilico.*

This garden herb (*O. basilicum*) is a native of the East Indies. It is highly aromatic, its perfume greatly resembling that of cloves. Not much used in England, but in France its leaves are in great favour with cooks for flavouring soups, salads, etc.

There are several other kinds of basil, all natives of warm climates, but only the *sweet* variety is valued.

Bass Brooms.—The bass broom, made from the well-known fibre of the *Piassaba* plant from Brazil, *Leopoldinia piasaba* (Para bass), and *Attalea funifera* (Bahia bass), commonly called "bent," was discovered in a manner that may be interesting. (This must not be confused with the Russian bass, from which bass, or bast, mats are made; that is from the inner bark of trees, and is largely used by gardeners for covering seed beds, also by furniture packers.) The *bass broom* industry has only grown up during the present century. Bent was formerly used as dunnage or stowage. Large quantities were frequently thrown upon the quays at Liverpool, and there remained, as the coarse grass was supposed to be of no further use. One morning a brushmaker, who was rather out of sorts through some indulgence in the cup that inebriates, strolled along the quay in the vain endeavour to get rid of a violent headache. For the purpose of whiling away the time he picked up a few pieces of the fibre, and after handling it for a moment, it occurred to him that it might be utilised for the coarser kind of brushes. He took some of the "bent" home and made a brush of it, which was of a class that was eminently suited to rough work. Being joined in the work by another man, for a time they realised large profits; but it soon became known that "bent" had a commercial value, and a price was placed upon it. Mr. Robottom afterwards travelled to many large towns in Europe and Amercia, buying and selling the article, and so introduced the bass broom industry into many countries. The Danes in Copenhagen were the first to go heavily into the making of these brooms, and in London the business was first taken up by a Mr. Hanks, in Kent Street, now Tabard Street. (See also *Brooms, Brushes,* etc.)

Bastards.—See *Cucumbers.*

Bastard Sugar. — A coarse kind of crusted loaf sugar, made from the syrups and other refuse of refined sugar, or from the impure or damaged sugar resulting from the heat and chemicals used, particularly from the impure crust which forms on the upper surface of the pans, and known as pan-sugar.

Baster's Soojee. — A kind of semolina; said to be a mixture of ordinary wheat-flour and sugar.

Batatas.—See *Sweet Potatoes.*

Bath or **Bristol Bricks.** — F. *Briques à couteaux;* W. *Bricsen felen.* (Also known as *Brick-dust.*)

These are friable artificial stones of yellow colour, composed of a fine calcareous or silicious sand or slime deposited in the River Parret, near Bridgwater, in Somersetshire, and within an area of about three miles, where the salt water meets the fresh.

The slimy mud is collected and dried, then ground and worked up with water in pug mills, then hand moulded into bricks, redried in the sun, and burnt in a kiln; finally, when cooled, each brick is rubbed somewhat smooth on a stone by women. They are mostly prepared at Bridgwater and are used for cleaning and polishing metallic utensils, knives, etc. *Flanders brick* is a similar article, but Bath *stone* is quite different, and used for building purposes.

Bath Chaps.—Small pigs' cheeks, chops, chaps, or jowls, cured or smoked for cooking whole. The two upper jaws, being separated into triangular forms, are retailed at 3d. to 4d. per lb. The two lower jaws also separated, being more meaty, and containing the tongue, are retailed at 7d. to 9d. per lb.

Cooks often spoil these; tell them to lay the "chap" in a pail of cold water, skin downwards, and let it remain one night. Scrub the chap with a small brush to cleanse it; put it into plenty of cold water to boil, make it come to a boil quickly, and then draw the pan aside to simmer two or three hours. Then skin and garnish with any boiled green vegetable.

Bath Cheese.—A noted kind of soft, creamy cheese.

Bath Oliver Biscuits.—Dr. Oliver, M.D., Bath, who died in 1764, was the inventor of these. Prior to his death he called to him his favourite coachman and said: "My good Atkins, I wish to put you in the way of making a livelihood when I am gone. I give you the recipe to make my biscuits; I give you a supply of ten sacks of finest wheaten flour and £100." Atkins took a small shop in Green Street, Bath. There he established himself as the sole proprietor and maker of Oliver's biscuits. He made a large fortune out of the biscuits, and was succeeded by Norris, Carter, Munday, Ashman, and James Fortt; the business is still carried on by the last-named, on the same premises in which these excellent biscuits have been made for the past 136 years. There are now several *imitation* Oliver biscuits made by other firms in Bath and elsewhere, but the "ORIGINAL" Bath Oliver Biscuits can only be obtained of James Fortt, 13 Green Street, Bath. They require very great care in their manufacture, and should be crisp, of a fine texture. With either wine or cheese, they make a delicate diet, are easily digested, and sell well in all high-class neighbourhoods. (See advt. at end of book.)

Bath Pipe, Lozenges, etc.—Consist of a paste made in the following proportions:—1 oz. of gum arabic, 1½ oz. of extract of liquorice, and 1lb. of white sugar, dissolved in warm water.

Batons. — A French word for sticks, such as "Chocolate Batons"—*i.e.*, chocolate sticks, etc.

Bavarian Beer. — See *Lager Beer.*

Bavarian Cheese. — These very much resemble Swiss makes, and are often sold as such.

Bay Leaves. — The leaves of a species of laurel, *Laurus nobilis,* or sweet-bay tree, generally a mere bush with large, tough, and shiny green leaves, which have a sweetish-bitter and aromatic taste, and a fragrant aromatic odour.

They are said to be narcotic and stimulant, and are used as a flavouring ingredient in many culinary processes; also in medicine and confectionery. Often found adhering to the sticks of Spanish liquorice, partly to prevent the sticks uniting to each other, but chiefly to preserve them from the ravages of small white destructive grubs or maggots, which are apt to bore full of holes the hardest liquorice juice. They are also packed among figs for the like purpose. In ancient times laurel or bay leaves were used to form wreaths or garlands to adorn the brows of victors. The term "bay," which is also applied to the plant, appears to be derived from the Latin *Bacca*, a berry, and the fruits are commonly known as *Bay berries*. (See also *Christmas*.)

Bay Rum or **Bay Water.**—(The druggists usually spell this word "*Rhum.*") It is a spirituous perfume, like Eau de Cologne, and is used as a highly-valued head-wash, pleasant, cooling, and cleansing, promoting also the growth of the hair, darkening the colour, and preventing *dandriff*.

The genuine article is prepared only in the West Indies and Venezuela from the oil of myrcia, distilled from the leaves of the *Laurus acris*, or wild clove tree, and not from *Laurus nobilis*, as often supposed.

In Dominica it is manufactured from the dried leaves of *Pimenta acris* by distillation, and in a very simple manner. The leaves are picked from the trees, dried, placed in the retort—which is then filled with water—and subjected to the process of distillation. The vapour is then condensed in the usual way, and forms what is known as "bay-oil," a very small quantity of which is required for each puncheon of rum. The manufacture of bay-rum is carried on at the northern end of Grenada, and proves a very lucrative business to those engaged in it, as the plants are plentiful in the district. The following is an estimate of rum, etc., required:—

	£	s.	d.
1 pun. rum—100 gals. about 18 to 19 proof, say, at 2/- per gal.	10	0	0
Empty puncheon	1	0	0
1½-pint bot. bay-oil pure to a pun. of rum	0	16	8
	11	16	8

The rum must be of the strength of 18 to 19 proof or the oil will not amalgamate properly. The *Pimenta acris* (more commonly, *Myrcia acris*) is the tree known in Jamaica as the wild cinnamon.

Inferior articles are sometimes prepared from the oil of bay, but these are very deficient in fragrance.

A very fair Bay Rum may, however, be produced as follows:—¾ oz. oil of bay, ¼ oz. oil of orange, 3 pts. of alcohol, 3 pts. of water, and a little precipitated Phos. Calcium. Mix the oils and alcohol, add the calcium and shake, then add water and shake thoroughly and filter. Colour with 90 proof rectified Jamaica Rum, or with a little caramel.

Bay-rum is also used as a refreshing perfume in faintness, or to sprinkle about sick-rooms.

Bay Salt or **Sea Salt.**—See also *Salt* and *Rock Salt*.

The salt obtained from sea-water by evaporation.

In hot climates this is done by the heat of the sun, the water being first retained in shallow square pools or "brine-pits" dug for the purpose. The crystals of this kind of salt are of more perfect form than in any other; also purer, from the greater slowness of the process.

Most of the salt in France is obtained in this way, and particularly on the coast between the Loire and the Gironde estuaries, also on the Mediterranean coast, but there are mines as well; the towns of *Salins*, and *Sous-les-Saunier* in the Jura Department, taking their names from salt mines.

The finest salt is colourless and transparent, with a specific gravity of about 1·125. Considerable quantities are imported into the United Kingdom from Portugal.

In the State of Colima, Mexico, there is an immense shallow lagoon called the *Laguna de Cuyntlan*, which stretches 20

miles inland from Manzanillo, on the Pacific coast. During the rainy season this lagoon is full of water, covering a large extent of low muddy ground. In the dry season hundreds of acres dry up, and are then found covered with a crust of fine salt crystals. The ground, earth, and salt together, to a depth of an inch or two, is scraped in heaps by men, women, and children, who carry it to a filter constructed of different layers of brushwood, branches of trees, etc., four to six feet thick, on the top of which the mass of salt and earth is thrown. Water is then poured over it to dissolve the salt, and it flows slowly down into a deep trench below the filter, while the earthy matter remains in the brushwork. The purified brine is then taken and poured into shallow basins, four to six inches deep, constructed of common mortar for evaporation by the tropical sun, and during this process the white crystals first appear on the top surface, but finally sink to the bottom. The crystallisation having been completed, the dry white salt is scraped together and put into sacks for market. Thousands of labourers are employed on this salt field during some three months, say, April to July.

Bean Curd. — See *Torfu* and *Soy*.

Beans. — Da. *Böuner;* Du. *Boonem;* F. *Fèves;* Ger. *Bohnem;* It. *Fave;* Port. *Favas;* Rus. *Boobii;* Sp. *Nabu, Habas;* Sw. *Bönor;* W. *Ffa.*

These well-known pulse (*Vicia faba*), largely cultivated both in fields and gardens, are to the farmer of peculiar importance, inasmuch as they grow best on strong, clayey lands, which would otherwise often lie fallow. There are at least twenty-five species of beans, seven of which are natives of Britain. Of the Windsor, Field, or Broad Beans may be noted: The early *Mazagan*, from a Portuguese settlement of that name on the coast of Africa, and whence the best seed is obtained; the *Long Pod*, very popular for its usefulness and fertility; the *Windsor*, *Green Windsor*, are highly esteemed for table use. The *white* or *red blossomed Dwarf fan*, or cluster-bean, is an early kind, but mostly grown for curiosity; *dwarf* red is a very early kind and highly productive, but perhaps the smallest kind grown. Beans grow admirably in Egypt, where their blossoms are much more odoriferous than in Europe. (Haricot Beans, Scarlet Runners, *French* or *Kidney Beans* are described under their own name.) The outer skin or covering with which the inner lobes of beans are enveloped is very tough and indigestible, and should not be eaten by delicate persons or those of sedentary habits; beans and peas at all times being apt to produce flatulence, indigestion, and heartburn. To shell beans easily, pour upon the pods a quantity of scalding water, and the beans will slip very easily from the pod.

Florida Velvet Beans.—These are a new and very prolific and vigorous variety, which give in leaf, vine, and fruit, from four to five tons to the acre and from twenty to thirty bushels of shelled beans. Animals enjoy both the leaves and the dried bean. The plant also makes a very handsome trellis climber, but requires rich soil and a climate rather warmer than most parts of England.

Bearberries.— Latin *Uva-Ursi*, from Uva (berry) and Ursas (bear). These red berries are the fruit of a species of the Erica family. They grow in bunches, and have been supposed to have been either a food for bears, or, being found in wild mountainous districts, the name may simply indicate the plant had the same habitation as the bear. Both the berries and leaves have valuable astringent properties used in medicine.

Beaufins. —See *Norfolk Biffins* or *Dried apples.*

Beaune Wine. — This takes its name from the town of Beaune (Cote d'Or), in the Burgundy district. The Beaune Hospital, which owns some excellent vine lands, sells its wine by auction, and the price obtained serves as a basis during the year for all other wine growers in the neighbourhood. (See *Burgundy.*)

Bechamel Sauce.—A white sauce of French origin, made chiefly from

arrowroot, cream or milk, eggs, etc., for use with fowl and similar white meats.

Beche de Mer Soup. — See *Trepang*.

Bedda Nuts.—A trade name for the fruit of *Terminalia bellerica*.

Beech Nut Oil. — F. *Huile de Faine*.

Obtained chiefly in France from beech nuts, *Fagus sylvatica*, after they have been shelled and pounded. The refuse after expressure of the oil is used as fuel. Beech oil is used for food and also for burning. In plentiful years a large quantity of this oil is made in Southern Germany. The nuts contain only about 22 per cent. of oil, yet the ease with which they are obtained, and the fact that the only expense is the pressing, have recently made its production a favourite industry.

The nuts themselves are sometimes roasted and eaten like chestnuts, also powdered and mixed with other meal for making into bread.

Beecham's Pills.—See also *Patent Medicines*.

Many examinations of these have shown their composition to be aloes and ginger, mixed with a little soap.

How the proprietor makes out that a 1½d. box is "worth a guinea" is a mystery. The ingredients might be bought for a penny.

Beef a la Mode.—F. *Bœuf à la mode*; G. *Gedämpfte Ochsenrippe*.

A sort of thick gravy soup or "*bouilli*." Proper "*Bœuf à la mode*" is not a mere rich stew such as is sold daily under that name in London cook-shops.

It should be prepared by *slowly simmering* meat for a long time. This is the essential point, and the gravy ought to be red in colour, rather gelatinous in consistence, and full of the agreeable flavour and nutritive matter of both meat and vegetables, which is the distinctive mark of the dish.

Take of rump, sirloin, shin, or rib of beef, say about 12lbs. Lard it through with 10 or 12 long pieces of fat bacon; put it into an earthen pan with calf's foot, 4 onions, 2 carrots (sliced), a bunch of parsley, 2 bay leaves, 2 sprigs of thyme, 2 cloves, ½ teaspoonful of pepper, 1 do. of salt, 4 wineglasses of sherry, 4 do. of water, and 1lb. of streaky bacon (cut into small squares); place on the cover; make it airtight round the edges with a little flour paste, and expose it in a moderate oven for about four hours. Dish up with the vegetables and bacon placed tastefully round it, the gravy (skimmed) being poured over all. Or it may be eaten cold, in which case the pan should not be opened until the whole is quite cold (*Soyer*).

Beef Chilled. — The annual consumption of flesh meat in England is about 87lbs. per head of population, and about 27lbs. of this comes from abroad. The fresh (chilled) beef exported from the United States amounts to about 300 million pounds a year, and many enterprising grocers with advanced "store" proclivities are now assisting in its distribution.

"Chilled" meat is very different from frozen meat, for it is never frozen. The principal firms engaged in the chilled meat trade are located at Chicago, where they have extensive works and the most elaborate plant and appliances for carrying on the business. The cattle are purchased from practically every State, and sent to Chicago. Then those which are selected to cross the Atlantic alive are forwarded to New York and Boston for shipment, while the others, the well-matured animals, are consigned to the slaughter-house. They are killed, and the beef is packed and conveyed in cold stores by special train to New York and Boston, where it is transferred to some of the best and fastest liners afloat. These vessels are provided with exceptional facilities for carrying the meat. In less than a fortnight from the day the animals are killed the beef is offered for sale in the English markets. It is richer than the flesh of the animals killed at Birkenhead and Deptford, because it suffers no deterioration during the voyage, and keeping it in the chilled state has the effect of making it tender and improving

the flavour and quality. Indeed, in this respect it is said to compare very favourably with English meat, which is rarely hung long enough to perfect it for the dinner-table. Chilled meat may be recognised by its colour, which is hardly so bright as in English meat. This is due to the fact that it has been kept longer, but when placed side by side with a joint of English meat hung in the larder for a few days, the difference is scarcely apparent. At first the British public looked askance at the foreign meat, but it gradually forced its way into popular favour, and now between 20,000 and 30,000 quarters of chilled beef are sold in England every week. The sales in the wholesale market vary considerably.

The price generally rules about the same as for English beef, but it has been slightly higher. The wholesale price of chilled beef at the present time ranges from 3d. to 4d. per lb. for fore-quarters, and from 5d. to 6d. per lb. for hind-quarters; while the retail price varies between 3d. and 7d. per lb. for joints from the fore-quarters, and 4d. to 10d. per lb. for cuts from the hind-quarters.

The great Chicago packing houses get a great deal more money from the by-products incidental to the killing of a steer than the meat sells for. On the average the meat and its compounds bring 40 dollars, while the by-products bring in at wholesale 55 dollars. The latter sum is roughly made up as follows:—Hide, horns, hoofs, and hair, 25 dollars; fats, blood, sinews, and bones, 15 dollars; miscellaneous and other wastes, 15 dollars.

It is only in the large and well-appointed slaughter-houses that the full value of the animals dealt with can be realised, and there become factories for a great many products, besides finding the proper and most profitable markets for each of the raw products into which they separate the animals. Nothing is allowed to go to waste, and ten years ago one of the largest butchers in the city declared that the Chicago packers were paying the entire cost of slaughtering cattle out of what the butchers here were paying to have carted away. Hides, horns, hoofs, and hair have had their markets for many years, and their value increases steadily. This is particularly true of horns, for the practice of dehorning cattle has become so general that in one great Chicago packing house it was found during a two-year count that the returns only showed one horn to every three bullocks. Horns are now worth about 150 dollars a ton. The hides go to the tanner, the hair for mixing in mortar. The tails do not go with the hides. Down at the tip is some long hair, and this is said to be turned into curled hair for upholstering.

If the hoofs are pure white they have a peculiar value. They are sent to China for jewellery making. Those which are striped, black or damaged, go into the kettle to be boiled for glue, and the residue made into hoof meal, a valuable fertiliser. In fact, everything which is not used for other purposes is at last turned into some form of fertiliser, even to the tankage water in which the coarsest of the refuse is boiled to extract its fats. The coarse bones are either carbonised and sold for sugar refiners' use or turned into fertilisers, and the blood is mostly dried and turned into another aid to agriculture. Some of the blood is sold in liquid form to sugar refiners, but not a great deal. The white bones, suitable for knife handles and such purposes, bring from 70 dollars to 90 dollars a ton, and go mostly to Germany.

The main parts of the animal as they are sent to market are all carefully trimmed, but there is no piece of good meat but has its market. Tongues and tails are regular articles of commerce, and even the meat from the cheeks is added to the supply for sausages, and the lips are cut off and pickled. Each character of fat is separated from the others, and finally these are marketed in the various forms of neat's foot oil, oleo oil, tallow and stearine and oleo-margarine. Before the horns are sold the pith is extracted from them, and the finest grade of gelatine is obtained from the pith.

The sinews are all separated, to be used for glue stock; the bladders are sold for holding snuff, and the greater part of the intestines are used for sausage casings. Parts of these have, however, a special use and value, and are sold separately to be made into goldbeaters' skin. The lining of the windpipe is also of particular value, being used for a fancy sausage casing, and also as a lining for pipes through which beer is passed in breweries. Beef extracts, pepsine, and many other things are made in some of the biggest houses.

A new use has recently been discovered for the contents of the paunch, which until lately had to be thrown away. It has been discovered that a good quality of cardboard can be made of it, and it is now being saved for that purpose. Of course, the large receipts from these by-products are not all profit, but there is a manufacturer's profit made out of each one of them which aggregates a handsome sum, and all of this helps to keep down the price of the fresh meats to the consumer.

Beef Essences. — See also *Meat Extracts*, *Juices*, etc.

The principle on which these are prepared may be illustrated as follows:— Place 1lb. beef chopped small and ½ pint of water in a bottle, which they only half fill; agitate them violently for half an hour; then empty on a sieve, and receive the liquid in a jug; next, boil the undissolved portion in a pint of water for twenty minutes and strain; mix this liquor with that from the jug and evaporate to the consistence of a thin syrup, adding spice, salt, etc., to taste, and pour while hot into dry bottles, jars, or tins, which must be hermetically closed, and stowed in a cool place; or finely minced lean beef is placed in water heated to 60°C. and well stirred for ten minutes, a large portion of the albumen and albuminoids, together with some of the extractives, pass into solution, whilst the myosin and much of the gelatine is left unchanged. The result is different if boiling water be used, coagulation and fixation of the albumen of the muscle taking place, the latter becoming hardened. If the boiling be prolonged for several hours, gelatine, extractives, and salts pass into solution, leaving behind the insoluble myosin and albumen. It will, therefore, be seen that a proteid or albuminous beef-tea fairly rich in nitrogen can be prepared by infusing beef below the coagulating point of albumen, but, on the other hand, boiling the beef merely yields a solution of the extractives, accompanied by some gelatine.

Most of the preparations are, however, of comparatively little value as foods, but are rather to be regarded as flavouring and stimulating substances. Many poor persons in times of sickness are misled by the term "Essence," or Extract, and imagine they are buying a strengthening food, but the hard-earned money is often wasted and the sick person starved.

What is wanted is a genuine liquid beef of pleasant flavour, which can be guaranteed to contain the whole of the proteids.

The extravagant and impossible claims put forward by some makers are simply ridiculous in face of the fact that the most concentrated meat cannot represent more than five times its weight of lean muscle.

One of the most popular and expensive foods yields on examination ·12 per cent. of albumen, 57 per cent. of solids, boric acid being used as a preservative. It appears to be merely compounded of a meat extract and a little added albumen. As a nutrient this article is really of no value, for an entire bottle only contains *one grain* of albumen.

Another food of the same class is merely a "doctored" blood, the corpuscles being evident under the microscope, whilst on heating a thick coagulum is formed. One hundred parts give 35 of solids, of which 12·7 are found to be coagulable matter composed of a mixture of albumen and hæmatin. This preparation is evidently made by whipping ox-blood to remove fibrin and then merely adding salt and boric acid as preservatives. However, being rich in serum albumen, it is not a bad nutrient.

Special Manufacturers.—Armour & Co., Chicago, U.S.A. (London address: 8 and 9 King Street, West Smithfield, London, E.C.), manufacturers of *Extract of Beef* (solid) and "Vigoral" (liquid). Both these are prepared from pure beef and largely used in soup making, bouillon, and general cookery. See also "*Bovril*" and *Liebig's Extract of Meat.*

Beef Marrow Soap. — A soap made of caustic soda lye and beef marrow heated until it becomes soluble in water, and then diluted with boiling water and brine.

Beef (Potted).—The ordinary kinds sold at pork shops, etc., are generally made of two parts Australian or American meat, with one part of any scrap meat. The latter is first boiled until well cooked, when the former is put in the boiler with it for a few minutes. A pound of gelatine is next dissolved in a quart of the liquor in which the meat has been boiled, and after the gelatine has dissolved, the whole of the meat, gelatine, with ground pepper, cloves, cayenne, salt, &c., as seasoning, is chopped as fine as possible, and sometimes coloured with red earths, &c. It is afterwards pressed into cold moulds.

Beef (Spiced). — Spiced beef is merely salted beef, when spices, usually black pepper and allspice, have been added to the salt, &c., used in curing it.

Beef Suet.—See *Hugon's* "*Atora*" *Refined Beef Suet.*

Beef Tea Cartridges. — Sold in 6d. boxes, five in a box, for travellers. One cartridge makes one cup.

Beef (Tinned). — F. *Viande en conserve*; G. *Buchsen fleische*; Sp. & Port. *Carne en conserva.* (See also *Tinned Meats.*)

Most of the tinned beef sold in the shops comes from the United States, and in 1896 nearly 39 million pounds were imported from that country.

The number of cattle slain in America, chiefly at Chicago and Kansas, each year for salting and canning is about 200,000, mostly raised in Wyoming, Montana, North Dakota and other States, west of the Mississippi, which also supply England yearly with over 300,000 live cattle three to four years old, as well as about 100,000 tons of fresh (chilled) beef.

Mode of Preparation:—All bone and gristle is removed; 2lb. of raw beef is required to yield 1lb. of tinned meat. It is first partially cooked in baths, then in suitable pieces transferred to tins of 2, 7, and 14lb. weight. These are next wheeled to another set of baths, in which they remain two to seven hours, and are gradually cooked without any supposed loss of natural juice or aroma. Air escapes through a puncture in the lid, which is at once soldered up on removal from the bath. The cans are afterwards scrubbed and cleansed from grease in a machine and finally labelled by girls.

In comparing the value of cooked beef with the prices of fresh beef sold by butchers, it should be remembered that in a sirloin of beef weighing 40lb. there are 5lb. of bone; in the wing rib about 25 per cent. of bone. A sample of tinned corned beef analysed by Mr. Wignor gave the following results:—Water, 64·9; albuminoids, 24·44; fat, 6·71; saline matters, 4·76. When it is considered that tinned meat has no bone, that it contains less water and more fat and albuminoids than fresh meat, it is clearly a cheaper article of nourishment than ordinary butchers' meat.

Wholesale Firms.—Morris & Jones, 13, 15, and 17 Sir Thomas Street, Liverpool. (Also proprietors of the "Shorthorn" brand.)

Beers.—F. *Bière*; Ger. *Bier*; It. *Cerevesa*; Port. *Cerveja*; Sp. *Cerveza*; W. *Bir, Diod, Cwrw.* (See also *Ale, Porter, Non-alcoholic Beers*; and *Bottled Beers.*)

The varieties of beer are very numerous. The alcoholic classes are professedly brewed from barley and hops

maize, rice, and "invert sugar," or glucose being now freely used. In fact, modern beers are best described as fermented saccharine infusions, to which any wholesome bitter principle has been added. This bitter principle is professedly obtained from hops, but it is often from quassia, and sometimes from calumba chirata, gentian, wormwood, &c. Nearly 60 million bushels of malt and corn, and 100,000 tons of sugar are used yearly in the United Kingdom for beer, while the licence and other duties on beer amount to over £10,000,000 a year. Some beers are made from roots, and others parts of various plants, as ginger, spruce-sap, beet, molasses, &c. There are, however, only three principal alcoholic types of fabrication—the English, Bavarian, and Belgian. The beers of England, as of France, and for the most part of Germany, become sour by the contact of air; but this defect is absent from Bavarian beers. (Lager, Pilsener, Piwarrie, Mum, Quass, Spruce, and Ginger beers, as also ale, porter, stout, &c., are separately described in their alphabetical order.)

Gratzer beer is brewed from wheat malt in Austria.

Schenk is a Bavarian draught beer usually drunk in winter.

Bock Beer and *Salvator* are both dark, heavy kinds of stout, very popular in Bavaria.

Kaiserlautern is the name of a famous beverage in Rhenish Bavaria.

There are over forty kinds of beer made in Belgium, mostly rather tart; the white, sparkling beers of Louvain, in South Brabant, are perhaps the most esteemed, the winter brew being termed *Faro*, the summer *Lambic*. They are both made with unmalted wheat and barley malt. They contain about five per cent. of alcohol and only three per cent. of malt extract. The hardness arises from the large quantity of lactic acid which they contain. The Faro is prepared from the strong Lambic and a small beer called *Mars*.

Uitzet is made in Flanders, *Arge* in Antwerp, and *Port Saisons* in the Walloons. *Hougaerde* and *Diest* come next in repute. The brown beers of *Malines* and the *Saison* of Liege are also considered fair. *Leipzig Goose* and *Berlin White Beer* are both very refreshing drinks in summer, but, like all German beers, they are far less potent than English.

English ale and porter ordinarily contain 5 to 10 per cent. of alcohol (Burton 6 per cent., Scotch ale 9 to 10 per cent.), but Lager Beers only about 4 per cent. However, on the Continent, want of strength is usually made up in quantity. The annual consumption in the United Kingdom, per head of the population, is 30 gallons of beer, 1 of spirits, and nearly half a gallon of wine. In Germany, beer, 52½; in France, beer 5, wine 29½. The public analysts of England say that no "noxious substances" have been found in beer for over 20 years, but as beer may be prepared with any substitute for malt, and any substitute for hops, it would be difficult to say what is adulteration and what is not.

Excess of salt is often met with, though analysts differ among themselves as to the quantity admissible. The Board of Inland Revenue does not appear to interfere with substitutes which are harmless, such as quassia, glucose, saccharine, and there is no restriction as to the quantity of salt that may be added; but the use of *cocculus indicus*, which is a poisonous intoxicant, should certainly be prevented. There is no doubt that one-third of the beer manufactured in this country is made from the substitutes mentioned, and it is a pity that a man who desires a glass of malt liquor should be served with these vamped-up chemical concoctions. With spirits it is much the same.

Bees-wax.—Ger. *Wachs*; F. *Cire d'abeilles*; It. and Sp. *Cera*; Rus. *Work*.

The purified comb of the honey bee, prepared by melting the comb in boiling water after the honey has been removed; the melted wax is then strained, and cast into cakes, which have a pale yellow colour and a pleasant odour.

White bees-wax is formed by exposing the yellow wax in thin slices to light, air, and moisture, and then re-melting and forming it into cakes.

It used to be thought the bees obtained their wax from a few specific plants, but it has since been found to be nothing more than the voluntary excretion of the insect, like perspiration from the human body, and that bees can make it when fed on honey and sugar alone.

The wax of one species of bee common in Patagonia, Terra del Fuego, and other parts of southern South America, and the adjacent islands, is of a dark blue colour, and is said to be highly poisonous—more so than arsenic.

A large quantity is prepared in England, and also imported from abroad. The British is the best, and generally of a pale yellowish-brown colour, and of a pleasant odour; the foreign being mostly of a pale dirty colour, and often containing dead bees, dirt, &c. That from Gambia is perhaps the worst.

The best, of course, is *pure* bees-wax, as made by the bees and then highly refined. A second quality consists of 4 parts bees-wax and 1 each of white wax and resin. A third quality is made of 9 parts each of bees-wax and white wax, 2 parts of stearine, and 4 of resin.

It is, moreover, often adulterated with ceresin or paraffin, especially *Mogador* and *Japan Wax*, and if with less than about six per cent. it cannot be detected with certainty by any of the ordinary methods.

An enormous quantity comes from North America and Chili, but sometimes weighted with large stones of 7lb. to 14lb., and it is generally adulterated with either paraffin, collophony, resin, stearic acid, carnauba wax, or spermaceti; American frequently contains as much as 80 per cent. of paraffin wax. Black earthy matter also is occasionally moulded into cakes and cleverly coated with yellow wax, whilst other samples contain chrome yellow, yellow ochre, hæmatite, mineral wax, and only a little bees-wax. Paraffin, however, is the chief adulterant, and the white flat saucer wax is almost invariably adulterated with it. The fact is partly accounted for by the practice of bee-keepers putting into their hives comb foundations for the bees to build upon, these being ordinarily made of paraffin wax. When the bees-wax from such hives is melted down it may thus contain 10 per cent. of paraffin.

There has been much argument as to whether bees-wax is really a food or drug, so as to be covered by the Food and Drug Act. Decisions seem to point to the fact that when taken inwardly it is not really used as a medicine, but as a vehicle only, and not as possessing of itself any healing or medicinal properties. Judges also have remarked that no one who wanted to use bees-wax for medicinal purposes would think of purchasing it at a grocer's shop. It is, however, safest to sell such wax merely as white or yellow wax, and not as "bees-wax," unless sure that it is pure.

Special Firms.—Kimpton Brothers, 36 and 37 Mincing Lane, London, E.C.; John Parkes & Co., Priory Works, Warwick; C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Beet.—F. *Bêtterave;* Ger. *Runkelrübe;* Port. *Betteraba;* Sp. *Remolacha;* W. *Betysen.* (See also *Mangold Wurzel*, etc.)

A sweet succulent plant of the genus *Beta vulgari*, of the order *Chenopodiaceæ*, and native of the sea-shore.

Four species are cultivated:—The common red beet; the mangel, or mangold wurzel (a large coarse kind, for

cattle only); the chard; and the slender-rooted sea-beet, cultivated for its leaves only.

There are many varieties of each species, some with carrot-like roots and others turnip-shaped. The small red *Beta rubra* are considered very wholesome for table use, contain about 80 per cent. of water and 10 per cent. sugar, and are often sliced in salads or boiled as a vegetable, but are considered best when baked.

The sugar-beet, *Beta ciela*, is a large white and very sweet variety, often called "*Silesian beet*." Its leaves are also used like spinach, and are frequently employed to adulterate tobacco, indeed, every part of the vegetable is utilised in one way or another. The pulp, after the juice has been expressed for sugar, is largely fed to cattle and found to be very nourishing. The leaves and stalks, when fresh, increase a cow's milk and enrich it; when dry, they afford excellent winter food. In fact, it has recently been discovered that beets, independent of the juice expressed for sugar-making, supply more abundant nourishment than any other forage ordinarily cultivated on the same kind of land. Sugar is a most important element of animal, as well as human food, and the starch of the beet is changed to sugar in the digestive process.

In France in 1881 it required 17 tons of beet-root to produce a ton of sugar, but in 1890 only 8½ tons.

Germany now cultivates about a million acres, which yield about 13 tons to the acre. About 13 million tons of the roots are submitted to manufacture, and yield some 1¾ million tons of sugar, or 12 per cent.

France grows only about half the quantity, and the roots practically yield only about 10½ per cent. of sugar.

Now that Spain has lost her interests in Cuba, she also is growing beet-roots extensively for sugar.

The *chard* is a small beet, chiefly cultivated in France and Germany for its leaves, which are used for human food in the agricultural districts.

Beets keep best in dry sand and are always seasonable.

Beet Sugar. — As early as 1747, Marggraf, a Prussian chemist, discovered that sugar could be extracted from the white Silesian beet-root, but a factory was not established till 1776. In 1799 one was started in Austria by F. K. Archard, a pupil of Marggraf, but the 2 or 3 per cent. of sugar that could be extracted by the methods then in use did not pay. The more extensive cultivation of the plant was, however, greatly encouraged by Napoleon I., during the war with England (1806), when cane sugar could not be got into France, and the percentage obtainable was doubled. In Great Britain it was not till after the Crimean war, when West Indian Muscovado sold at 65s. per cwt. in the Glasgow markets, that the saccharine potentialities of beet sugar attracted refiners in this country. In 1860 the total production on the Continent was only 400,000 tons, of which France contributed 146,000 tons; Germany, 125,000; Austria, 55,000; Holland and Belgium, 74,000. In 1884 the imports of beet exceeded those of cane, till now about three-fourths of the sugar consumed in England is beet-root sugar, and as it is all made abroad we pay Germany, France, Austria, Belgium, and Holland about fifteen millions a year for it.

In 1894-95 Germany produced 1,192,011 tons; Austria, 1,044,500 tons; and France, 745,100; and Belgium, about 265,000 tons. It is chiefly made from the *white* beet-root (*Beta ciela*), which is first washed and rasped, or grated by hand or machinery.

The wet pulp is then folded up in a number of coarse flannel cloths in the form of a square cake, and put upon an iron plate; another plate is then put on the top, then another cake of pulp, and so on until there are fifty, sixty, or seventy cakes piled one above the other. The whole mass is then subjected to a gradual pressure in a powerful hydraulic machine till finally a very great pressure is brought to bear on it, and 80 to 85 per cent. of juice is extracted. By the diffusion process, which is based on the

physical phenomena of endosmose and exosmose, 94 to 95 per cent. may be obtained. The roots, previously cut into small bits, are immersed in water, and the interchange between the water and the sweet juice of the beet begins at once, through the intermediary porous partition represented by the cells of the beet substance, which separates the water from the juice contained in the cells. This method has a great advantage over that of pressure, which detaches part of the fibrous texture of the beet and renders the juice more or less impure. Moreover, the pulp from diffusion contains more organic matter than that obtained from pressure, and is much more valuable as food for cattle on account of its greater nutritiveness.

The juice is somewhat dark coloured, and is not fit to eat till clarified, or as it is technically termed *defecated*, by elaborate processes of boiling in lime, skimming, filtering, etc. It is afterwards refined similar to cane sugar, and made equal in appearance to the finest kinds of "moist" or "lump" cane sugar. The use of animal charcoal in the manufacture of raw beet-root sugar is now becoming quite exceptional, and even in the refining process its use is falling off; but it is usually heavily blued to improve the colour. Some of the foreign made beet sugars imported into this country have been found to contain large percentages of *carbonate of lime*, hard flinty white crystals, wilfully left in, or added to the sugar to cheapen it. Of course it is quite legitimate to use lime in refining sugar, but to sell it to grocers, etc., thus loaded with this carbonated and insoluble substance, is grossly fraudulent.

The largest beets are not the best, for they often contain much poorer juice than smaller ones, and it is the juice which contains the sugar. Some roots contain 20 per cent. of sugar, others scarcely six.

The average total percentage of saccharine in German beet is now 15 to 16, while in France it is just over 14, or, say, 7lbs. of sugar from 100lbs. of beet. Of course the whole of it is not extracted. A few trials have been made in England and Ireland to grow sugar beets, but nothing seems to have become of them so far. Many think the palmy days of beet are over, and that cane sugar will soon regain its position.

The chemical composition of beet sugar is often argued to be identical with cane, but whether it is so in use is very doubtful. For confectioners, bakers, jam and British wine manufacturers, etc., beet sugar is certainly not desirable. It is not capable of high crystallisation; it assumes a redness under heat and imparts a dull dark colour to pastry and other light fancy goods, and it is of inferior sweetness, besides having the unpleasant flavour and taste known as "hogo."

Beetle Powders, etc.—(See also *Insect Powders*.)—For destroying black-beetles, cockroaches, etc.

(1) Mix well together a teacupful of fresh flour, a teaspoonful of white castor sugar, and enough red lead to make the whole of a light pink colour. Lay the powder every night in their runs on sheets of paper, say a tablespoonful on each sheet, and remove during the daytime to a safe place out of the reach of children.

(2) Mix plaster of Paris and oatmeal together, dry, and place where the beetles congregate. They eat the mixture greedily, and it is certain death to them.

(3) Lay wafers made up of red lead, flour, and sugar, equal parts.

(4) Mix equal parts of Persian Insect Powder and powdered Levantic wormseed. Scatter about the places which the cockroaches frequent.

(5) Mix arsenic solution with honey, boiled potatoes, bread, or treacle.

(6) Spread fresh cucumber peel every night on the floor where the beetles are wont to congregate; they are very fond of the juice, which, however, is a deadly poison to them.

(7) Put unslaked lime in their holes, or on the floor; or (8) use powdered hellebore in like manner.

(9) Wheat flour, 2 parts; powdered borax, 1; unslaked lime, 1; and

powdered sugar, 4; mix thoroughly and keep dry. Place on papers about infested localities.

(10) Mix a little treacle with beer in a deep dish; place a few sticks at the side so that the beetles may walk up and fall in.

(11) 10 parts powdered borax and 5 parts of precipitated carbonate of baryta.

(12) Take of cocoa in powder, 4 parts; starch, 8 parts; borax, 36 parts. Mix thoroughly. To be scattered on the floor in places where the beetles congregate.

Beetles caught alive in traps, etc., are easily killed by throwing them into hot water, but the habit of throwing water into ash-pits under the fire greatly encourages them.

Bell Pepper. — See *Capsicums.*

Benafouli Rice. — A very fine variety grown in Bengal, and which is said to be more easily digested than ordinary qualities, and emits a very agreeable aroma in cooking.

Bencoolen Tea.—See *Malay Tea.*

Bendi-Kai. — See *Gumbo* and *Okra.*

Benedictine. — See also *Liqueurs.* A liqueur or cordial closely resembling *Chartreuse*, but dating from the 14th century. Its predominating flavour is that of angelica. It was originally prepared by the Benedictine Monks at the Abbey of Fecamp, in Normandy, hence its name; and it is said that the principal inventor was the Abbe Antoine, also that he was made a cardinal for his pains, although the story is not perfectly authentic.

What is certain, however, is that Francis I. held the elixir in high respect, and protested that it acted as an antidote to all his ailments, which was perhaps only his way of saying that it warmed up the cockles of his heart when he was in low spirits. Before the Revolution of 1789 it was one of the most fashionable liqueurs of the day, but at that time it encountered a powerful rival in the *Liqueur d'Hondaye*, of which mention is made in the chronicles of the period. But this did not live long, and Benedictine once more became the vogue. The Revolution drove out the monks, and destroyed their abbey, and with them the secret of the composition of their liqueur was lost for many years.

Its ingredients baffled analyses, and the only hypothesis tenable concerning this cordial was that angelica and some mysterious plants growing on the "falaises" or cliffs of the Norman coast entered into its composition. In 1863, however, M. Legrand, an intelligent and enterprising inhabitant of Fecamp, whose name now appears on every label, managed to get hold of the archives of the ancient monastery, and after studying them found out the precious secret. At least so he said, and there is no reason to doubt his word. He began to distil the nectar, and with so much success that two years later a company was started under his direction for the manufacture of it on a large scale. The old abbey was rebuilt, and the distillery adjoining it was organised in the most scientific manner.

The bottles or flagons like those used for other monastic liquors are made of black glass and of carboy shape, but with a longer tapering neck, and encased in fine wicker work, are still labelled with the sign of the Greek cross, and the letters "D.O.M." (*Dei omnipotenti* (or *optimo*) *maximo*—To God Almighty very great and powerful). The Jesuits mark their product also with a cross, consecrated with the four letters, A.M.D.G. (*ad majorem Dei gloriam*—For God's greatest glory). The venerable abbey (which had been restored in the style of the Renaissance mixed with Gothic and the Roman), also the factory, were all accidentally burnt down in January, 1892, but the celebrated liqueur is now produced at a large new factory, and the annual output is about a million bottles. About 30 per cent. of the concoction is consumed in Finland by some 100,000 people, who make it their national cordial for all times, suitable or unsuit-

able, and despite its high price often drink it out of tumblers.

Benedictine is retailed in England at about 7/6 a flagon.

Bengal Chutney or **Chitni.**—See also *Chutneys.* This is a kind of Indian Chutney in paste or pulp form. It is usually prepared very hot by the addition of chillies, etc., and is then called *Bengal Hot Chutney. Bengal Club Chutney* is of only medium hotness and fairly sweet.

The following is considered a good average recipe for this favourite condiment:—Chillies, 1½lbs.; unripe mangoes or apples, 1lb.; red tamarinds, 2lbs.; sugar candy, 1lb.; fresh ginger root, 1½lbs.; garlic, ¾lb. to 1½lbs.; sultana raisins, 1½lbs.; fine salt, 1lb.; and about 3½ quarts strong vinegar.

Soak the chillies for about an hour, then grind all with a stone and muller to a paste or pulp.

Benicarlos Wine. — A dark red variety of considerable strength produced from the vineland surrounding Benicarlo, in Valencia, Eastern Spain. This wine is extensively used for blending with other red kinds, especially Bordeaux.

Many of the cheap Ports are also manufactured from Benicarlos Wine, and some 250,000 casks are said to be exported annually for this purpose, a great portion of it going to Cette, in France.

Benne or **Bene Oil.**—See *Gingelly* or *Sesame Oil.*

Bennin Pepper. — See *Cubeb Pepper.*

Ben-oil or **Behen Oil.** — Lat. *Oleum Balatinum.*

This has no connection with the above *oil of Benne* or gingeli seed, but is the expressed oil of the *ben-nut*, the winged seed of the horseradish tree, *Moringa pterygosperma*, which resembles the willow. This bland and inodorous and colourless oil is remarkable for its agreeable flavour and for remaining many years without going rancid. At a temperature near freezing point it deposits its solid fats, and the remaining liquid portion is used in extracting the perfumes of flowers, and by watchmakers for the lubrication of delicate machinery; also as hair-oil, owing to its power of retaining odours it is highly valued by perfumers. It is also used in preparing Macassar oil, and sometimes as salad oil.

The best ben-oil, however, is said to be derived from the seeds of *Moringa aptera* of Abyssinia and Arabia.

Benzine or **Benzol.**—F. *Benzine;* G. *Benzil;* It. and Sp. *Benzina.*

These are colourless volatile liquids, usually distilled from light coal-tar naphtha, or gas tar oil, and consisting chiefly of *benzol* C6 H6, specific gravity about 0·85. Also procured from benzoic acid and slaked lime. *Benzine Collas* is a high-priced and much-advertised French make, the firm pretending that Collas was the inventor of benzine, but there seems no real difference between this and other cheaper makes. These preparations are extensively employed for the removal of spots of grease, paint, etc., from woven fabrics, and are quick solvents for gutta-percha, indiarubber, paints, varnishes, etc.; in fact, benzine dissolves all the oils, resins, gum-resins, varnishes, and fats, and is therefore very useful. It is much the same thing as *petroleum spirit.* To distinguish coal-tar benzol from petroleum benzol, add a crystal of iodine to a few drops of the benzol; it will give the former a violet-red, and the latter a raspberry red colour.

Benzoline. — Port. and Sp. *Benzolina*—(Also known as *Petroleum Spirit, Petroleum Ether,* etc.).

A colourless, very volatile, and highly inflammable liquid obtained from American rock oil or petroleum, and often consisting of a mixture of the lower members of the paraffin or marsh-gas series of hydrocarbons. Boiling point 122° to 140°F. Specific gravity 0·670 to 0·700. Largely used as a lubricant for motor machines.

If used for burning purposes, care should be taken to use a sponge lamp so as to ensure the vapour (which is extremely inflammable) being well diluted with fresh air when burnt. A licence under the Petroleum Acts is required for its storage.

Bergamot Essence. — This pear-like perfume may be made either from the essential oil of Bergamot and methylated spirit, say eight parts of 95 per cent. alcohol to one part of oil of Bergamot, mixed and coloured with tincture of grass; or, better still, by grating the gold-coloured rinds of Bergamot oranges, then squeezing out the juice of the rind and filtering it.

Bergamot Oil.—An essential oil obtained from the flowers or rinds of the Bergamot orange (*Citrus bargamium*), so called from the city of Bergamo, Lombardy, in the North of Italy, where the tree first grew. But the oil is now only produced in Reggio, at the extreme South of Italy, and is mostly exported through Messina.

Both the flowers and the rinds of the Bergamot orange yield this fragrant oil, which seems to derive its delicious pear-like fragrance from the acetic ester of linalool. An inferior sort is also made from the roots of the tree. There is also an excellent round pear named "Bergamot," from its melting juicy pulp and pleasant flavour, but this is no relation to the above citron.

Bergamot oil is extracted in the same way as lemon oil, and probably no other essential oil is so heavily adulterated.

When pure it is a limpid, yellowish fluid, having a smell resembling that of the orange. Its specific gravity varies from 0·888 to 0·885.

It becomes concrete when cooled a little below 32°F.

Turpentine, oil of lemons, oil of sweet oranges, resin, pitch, and even stearine are all commonly added to cheapen oil of Bergamot.

The crucial test is the proportion of a substance called *Acetato di liniale*, for it is this ingredient which gives its odour to the essence.

Berlin Blue (also called *Steel Blue*) is obtained in same way as *Prussian Blue*, but is usually a little lighter in colour.

Bermuda Arrowroot.—The Bermuda Islands were acquired by Great Britain in 1609.

They are a group of islands in the North Atlantic, twenty miles square, with a population of 17,500. Their chief products are early vegetables, bulbs, and arrowroot. On account of the smallness of this colony, foreigners are not allowed to be naturalised or possess land. The imports are £304,893, the exports £101,163, and the revenue £34,356.

Hitherto no authentic account has been given of the interesting arrowroot industry carried on in Bermuda. One reason for the superior character of Bermuda arrowroot is the scrupulous care taken in every stage of the manufacture. The mode of culture is very similar to that of the common potato. The roots, after being collected, are washed, and their outer cuticle completely removed. This process requires care, for the cuticle contains a resinous matter which imparts colour and a disagreeable flavour to the starch, and cannot be removed by subsequent treatment. The pared roots are then well washed, and crushed to a pulp between powerful rollers. The pulp is thrown into perforated cylinders, where it is agitated by revolving wooden paddles, while a stream of pure water carries off the fecula from the coarser fibres of the pulp, and discharges it through the perforated bottom of the cylinder. Thence it is conveyed in pipes, and passed through fine linen strainers into reservoirs, in which it is allowed to settle, and the supernatant water drawn off. After repeated washings, it is again allowed to settle for some time, when the surface is skimmed with palette knives of German silver. The rollers and cylinders are made of brass and copper. The drying is conducted with equal care and cleanliness. The substance, spread in flat copper pans placed on rollers, is covered with gauze

and run under glass-covered sheds when there is danger from rain or dew. When dry it is packed with German silver shovels in new barrels lined with paper, which is stuck in with arrowroot paste. The barrels are exported on the deck of vessels under cover, since, if placed in the hold, the arrowroot might be tainted by the effluvia of other freight.

Betel. —F. *Chique de bétel.* (See also *Areca Nuts.*)

This is the name of a popular masticatory extensively compounded and chewed by the natives throughout the East. In India it is called *Adiki* or *Addaca;* the Malays call it *Pinang;* the Hindoos, *Suapril;* the Javanese, *Jambi;* and in some places it is called *Sirith.* It is prepared by folding the kernels of the areca or betel-nut palm (*Areca catechu*), a little powdered slacked lime (*Chunam*), and sometimes a little terra japonica, in the leaf of the betel pepper (*Chavica betle*), a species of climbing vine largely cultivated in the East Indies, Ceylon, Burma, Siam, etc. The Philippine islanders wrap the nut in buyo leaves smeared with lime. The betel roll, or "Buyo," thus prepared is hot and acrid, with considerable aromatic and astringent properties, and often very intoxicating; it tinges the saliva red, and soon blackens the teeth and gums. The juice is sometimes, but not always, swallowed.

The Southern Asiatics of both sexes and of all ages carry "*betel*" in small pouches, and are perpetually chewing it to sweeten the breath, dispel nausea, strengthen the stomach, and to give a bright red colour to the lips.

On ceremonial visits these betel pellets are often the only refreshment offered to Europeans by the natives, and are usually presented wrapped in gold or silver leaf, and in elegant "betel boxes."

Its use has been traced to very remote antiquity, and to refuse to accept "betel" would often give irreconcilable offence. Its use may be compared to tobacco chewing, smoking, or snuff-taking in this country, or to coca-leaf chewing in Peru.

Betel nuts were only introduced into this country as a medicine in 1867.

Betel leaves have been found to be highly beneficial in catarrhal affections and throat inflammation.

Beverages, various. — F. *Boissons;* G. *Getränke;* Sp. and Port. *Bebidas.*

These may be found under their respective names. See *Aerated Beverages, Aerated Waters, Mineral Waters, Temperance Drinks, Non-alcoholic Beers* and *Wines, Cider Perry, Ales, Arrack, Pulque Spirits, Cherry Brandy, Kali, Maté, Tea, Coffee, Cocoa.*

Bhang. — Also known as *Churrus, Momeca, Gunjah, Hasheesh,* etc. These are all Indian narcotics. *Churrus* or *Charas* is the name used in districts north of the Punjab for a resinous exudation obtained from the tops of the hemp plant, *Cannabis sativa,* worth 5/- to 10/- per lb., and gathered by men clad in leather dresses, who run through the hemp fields brushing violently through the plants, when the soft resin adheres to the leather and is afterwards kneaded into balls. Sometimes the leather dress is dispensed with, and the resin is collected on the skin of the naked coolies.

It has been used, as has opium, since Indian history began, and is more intoxicating than either Ganja or Bhang.

Gunjah, Guaza, or *Ganja* is the name for the extract secreted on the female flowering or fruiting shoots. It is used for smoking, and is popular as a sort of tobacco, for it is supposed to have medicinal properties as an anti-spasmodic and anodyne, but its continued use often leads to idiocy.

Bhang is a name given to the larger dried leaves and slender stalks, which are also known as "Tubjee," and "Siddha," or "Sidee."

They are also roughly broken and mixed with some of the fruits. Bhang is of a dark green colour and chiefly used for smoking; an intoxicating drink is also made by infusing it in water, and adding a few seeds of stramonium. Bhang, when mixed with

flour, sugar, etc., is also made in India into a kind of sweetmeat called "*Majoon*" or "*Majun*."

Momeca is a superior kind of resin, collected by hand in Nepaul, and worth nearly twice as much as ordinary *Churrus*.

Biborate of Soda. — A technical name for *Borax*, which see.

Bi-carbonate of Soda, or **Baking Soda.** — This is made by first melting the crude carbonate of soda (*Sodium carbonate*) in hot water, and then cooling it in shallow pans, when it forms into large soda crystals. This crystallised soda is next exposed in an atmosphere of carbonic acid, so that while absorbing the acid, the crystals lose their water, and eventually fall into a white powder, which contains twice as much carbon as of crude soda (*Sodium carbonate*) and hence its name of *bi*-carbonate.

By mixing almost any acid or acid salt with bi-carbonate of soda, this carbon will be turned into carbonic acid and pass off as gas; thus, 20 parts of bi-carbonate of soda will neutralise 16½ parts of citric acid or 17½ parts of tartaric acid.

Bi-carbonate of soda is largely used in preparing baking powders, self-raising flours, etc., and a special kind is employed in the production of aerated beverages. It is also useful in medicine. In cases of slight burns, dusted over the surface, it often affords great relief; so, too, it does if inserted into the decayed cavity of an aching tooth. In weak solution it, as well as the stronger and cheaper carbonate of soda, or "washing soda," when applied to the skin, gives great relief from the itching of prickly heat or of hives. Its internal use as an antacid to correct sour stomach, or to relieve heartburn or indigestion, is well known.

Dose for an adult say ½ oz. mixed in a tumbler of water. Sold wholesale in 1 cwt. kegs.

Brunner Mond & Co., Northwich, Cheshire, are now the largest manufacturers.

Gardner's patent "Rapid Sifter and Mixer, freely used for above. Prices, from 50/- to £100. Catalogues from Wm. Gardner & Sons, engineers, Gloucester.

Bilberries.—See *Whortleberries*.

BILBERRY.

Biltong or **Biltongue.** — A name for sun-dried meat in Cape Colony. The dried flesh of the ox or wild buck. Very popular with the Boers in Africa, and often called *South African Venison*.

Bicycle Oil. — There are various sorts sold under this name, mostly mixtures of sperm with paraffin or neats-foot oil. Some are adapted both for lubricating the machine and for burning in the lamp, while others are intended for only one of these uses.

Bicycle Tyre Cement. — In 6d. and 1/- pots. A good one is made by melting two parts of asphalt and one part of gutta-percha together in an iron pot. It must be applied hot.

Another.—Dissolve 20 ozs. caoutchouc and 10 ozs. gutta-percha in 10 ozs. of carbon bisulphide, then add 5 ozs. fish glue. After applying, bind the tyre with cord until cement is well set.

Apply to E. Mitchell & Sons, 5 Burnett Place, Bradford, Yorks.

Biffins or **Beaufins.** — See *Norfolk Biffins, Dried Apples*, etc.

Bigarde or **Bigarade Oranges.**— See *Bitter Oranges.*

Bigarreau.—See *Cherries.*

Birch Tar Oil. — A pyroligneous oil (*Oleum rusci*) distilled from the bark of the white birch, *Betula alba*, a forest tree met with everywhere in the North of Europe. It is this oil which gives Russia leather its characteristic odour, and also which helps it to resist mould and damp, birch bark being commonly used in Russia for tanning. Russian, German, and Dutch varieties are, however, by no means uniform. An extract of birch is not infrequently used to perfume inferior leather goods to make purchasers believe they are getting good Russia leather.

In fact, this peculiar smell is now no more Russian than Eastern, and is often due to the process or curing by the smoke of leaves instead of tanning.

Bird Foods. — See *Bird Seed*, also *Poultry Foods.*

Bird Lime. — F. *Glu;* G. *Vogelleim;* It. *Pania;* Port. *Visco;* Rus. *Ptilochei;* Sp. *Liga;* W. *Glyd.*

A viscous substance of greenish colour, made from the inner or middle bark of the mistletoe and the holly. It has a bitter taste and an odour like linseed oil. The bark is first boiled several hours in water, then the thin water is poured away, and the substance retained, and after being allowed to stand exposed to the air about fourteen days is beaten into a pulp until it becomes thick and sticky. Afterwards small twigs are smeared with it and placed where birds are likely to light on them. Bird lime is also made of mistletoe berries, young elder shoots, the bark of the *Wayfaring* tree, etc., by a similar process. Another kind is made by boiling half a pint of linseed oil with a little resin on a slow fire, stirring occasionally, till it thickens or turns stringy. When the desired consistency is attained it is poured into cold water. Should it stick to the hands it may be removed by a little turpentine.

Bird-nest Soup.—See *Edible Bird-Nests.*

Bird Peppers (variously known as Bird's-eye chillies, Red bird-pepper, &c.).—The ordinary term in the West Indies for the Cayenne pod, small red chillies, or *Capsicum minimum.* This plant grows nearly five feet high, with lucid green leaves, and produces the ordinary cayenne of commerce. The pods are green at first, but turn to a bright orange or scarlet colour when ripe, and are then gathered and dried in the sun.

Some "Red bird-pepper" has an agreeably aromatic flavour and very pungent taste; it is sometimes pounded with salt, preserved in bottles, labelled and sold as Cayenne pepper.

But there is another sweet, and sometimes tasteless, variety of *C. annuum*, which often passes as "Pod Pepper," although more correctly described as "*Bird Pepper.*" Both of the above kinds are received in quantity from Japan, Jamacia, Zanzibar, Spain and Portugal.

This sweet variety possesses very little pungency, contains a large amount of fatty matter, is dark in colour, and is said to heighten the colour of the feathers. Although supplied by two or three firms, its exact source is very difficult to trace. It was originally supposed to come only from the northern part of South America. Professor Archer thinks it is produced by *C. tetragonum*, which has a much blunter fruit than the *C. annuum*, and is obtusely four-angled. It is very largely used in Hungary and in Spain.

Bird Seed. — F. *Graine d'oiseaux;* G. *Vogelsamen;* Port. *Græs de passaro;* Sp. *Granos de pajarro.*

Bird seeds have a large sale in some of the manufacturing districts. The following mixings are all popular:—

(1) All canary seed.

(2) 20 parts canary and 4 of rape.

(3) 20 parts canary and 4 of hemp.

(4) 15 parts canary, 2½ of hemp, 4 red millet, 1½ summer rape, and 1 of inga seed.

(5) 16 parts canary, 2 hemp, 3 rape, 2 millet, and 1 part of English linseed.

William Gardner & Sons, engineers, Gloucester, make machines specially suitable for treating above. Catalogues free.

"*Colour Food*" *for Birds.*—The chief ingredient in this is *Capsicum annuum*, the non-pungent variety of capsicum which has an intensely red, oily pericarp. It can only be obtained from a few of the leading wholesale seed merchants. Some of these powders contain, as well, a little turmeric, bread-crumbs, and some of them sugar. It has been found that almost any colour which will dissolve in oil, if given in that solution, will permeate the feathers, and even the bones and the eggs of birds constantly fed with food containing it.

Bird's Eye Chillies. — See *Chillies.*

Bird's Eye Tobacco. — (See also *Tobacco.*) — Generally manufactured from the unstripped leaves of Kentucky, Missouri, and Ohio growth, and forming when ready for use a loose fibrous mass with thin slices of stalk interspersed, the latter somewhat resembling *birds' eyes.*

Birthday Cakes. — See *Bride Cakes.*

Biscuit Powder or **Meal.**—(See also *Prepared Foods*, or *Infants' Food.*)—A preparation for the use of invalids, children, &c., and composed of selected kinds of crushed or ground biscuits that have been broken or damaged in manufacture.

Cheap biscuit powders are also used largely by manufacturers of sausages, saveloys, &c. Some consist chiefly of sweepings of the factories, ovens, or from returned empties.

Biscuits.—Amer. *Crackers*; F. *Biscuits de luxe*; G. *Zweibäcken*; Port. *Bolaxas*, *Bis-costas*; Sp. *Biscochos*, *Galletas*; W. *Cras-deisen.*

Biscuits are the oldest form of bread. At what period of man's history the lightening of dough by fermentation was first adopted no one, of course, knows. It is, however, certain that cakes made of nothing but meal and water and then baked are very much older. Fragments of unfermented cakes were discovered in the Swiss lake dwellings which belong to the Neolithic age, an age dating back far beyond the received age of the world. This is the earliest instance of biscuits as yet discovered, for biscuits are merely unfermented bread. Although this rude form of bread was early discarded for the fermented variety, yet in this, as in many other matters, it was found convenient to return to a discarded and apparently valueless process. Thin, unfermented cakes were found to possess merits for special purposes. They would keep good for a great length of time, and they were convenient to carry, and thus afforded wholesome and nutritious food in a portable and convenient form. The simplicity with which they could be made and baked was also a point in their favour. The word "biscuit" embodies the process by which biscuits were made from time immemorial to within the last century, if not, indeed, later. Bis, twice or double, and cuit (coctus), cooked, shows that they were twice baked; and although the double process has now been discarded, yet the name is retained.

The pastry-cooks of Rheims were the first to produce *Fancy* biscuits, and, indeed, it was only about 1840 that England began to manufacture these dainties in earnest. The tremendous factory which now dominates the whole town of Reading, and on which the 70,000 inhabitants of that town largely depend, owes its origin to the late Mr. George Palmer, who some 60 years ago joined Mr. Thomas Huntley in his business in that town, which was originally established in 1826.

One of the first and most popular biscuits was the "Picnic," but since that time every year has witnessed the introduction of numerous other fancy

descriptions, until the "Biscuits de Rheims" have been quite superseded, and the French have had to begin afresh by copying the *genre anglais*.

Biscuits are usually made from very stiff dough, which has been subjected to no fermentative action, and are baked for only a very short period of time; we might almost call it a mere drying. The dough is simply collected in receivers and put through a series of rollers to be reduced to the proper thickness, after which it is cut by machines into the desired sizes and forms, and then baked in tins or passed through ovens on an endless band or chain until sufficiently *dried*. The fancy kinds require special manipulation in order to add to the decorations, and this is done with great rapidity by girls, each with a bag of icing, which is pointed like a pencil, to draw with, upon the cut paste, before being passed through the oven. Sometimes this ornamenting is done after the biscuit or cake has been partly baked.

The quality of the flour is not so important as for bread, and the kind most used is that called "soft." But some kinds of biscuits are made from strong flour, especially the low-priced sorts, where bulkiness is the chief consideration. For the large farthing and halfpenny biscuits, sold in low neighbourhoods, the soft or biscuit flour would be useless, also in biscuits of the "cracker" series, which require flour well proportioned with gluten to make them spring, and to produce the flaky appearance.

Local customs, tastes, and styles vary in different districts regarding biscuits.

The softest kinds of flour are, however, generally used for what are called the finest class of *Tea*, *Wine*, *Marie*, *Paris*, and *Nile* biscuits. These *soft* flours also colour much better than the *strong* ones.

The best biscuits for keeping are those made from flour and water, like the hard, old-fashioned *Sea Biscuits*.

To preserve their crispness and flavour, all biscuits should be stored in a cool, dry place, and not exposed to heat, air, sunlight, or moisture.

Biscuits made from unsound, musty flour, or if not sufficiently dried, or if kept in a damp place, soon develop fungi and weevils. Damp atmosphere also soon penetrates ordinary biscuit tins, and produces a putrefactive change in the form of mould of either the *A. glaucus* or *M. mucedo* species, or perhaps both.

The presence of lard or butter accelerates the growth of *Mucor mucedo*, especially during warm weather. The surface becomes covered with small white filaments, called *hyphæ*, which terminate in rounded heads or *sporangia*.

Sugar, however, exercises a retarding influence, and the more sugar in them the better they will keep; hence, the reason why most of the biscuits exported to India and other warm countries are the "mixed," or sweet kinds.

The harder a biscuit is dried in the oven the longer it will keep.

All plain biscuits *without* sugar require a *much warmer oven* to bake them.

Rich biscuits always contain more or less warm moisture in themselves, hence they are liable to go rancid if kept long; but they keep better and longer in small tins than in large tins or boxes, where the heat naturally becomes much greater. Of course, to add much sugar to some kinds, such as plain lunch, milk, toast, &c., or to make other rich sorts without butter or lard, would make them keep better, but would render them different biscuits altogether.

All *soft* biscuits containing much sugar, however, soon soften if exposed long in a moist atmosphere, and even plain sugarless kinds are soon affected by air or moisture.

Water biscuits, for instance, if exposed to the air for any time, become soft owing to the moisture of the atmosphere.

An excessive use of soda is commonly betrayed by a mousey smell and fla-

vour, very unpleasant to most people. This is very noticeable in Crackers, and other plain kinds.

A ginger nut is, indeed, an excellent barometer, for when exposed to the air it becomes softer in proportion as the moisture of the atmosphere increases.

Biscuits when hard and crisp practically contain no moisture at all, but when exposed to the air they are soon assimilated to it. If moister, they turn soft and moist; if drier, they turn harder and drier. (The same is the case with bread.)

Excessive paleness or whiteness in biscuits is not considered a good feature, but usually suggestive of age or imperfect baking, both of which are fatal to the rich bloom of freshness and good flavour.

Some kinds are considered deleterious from admixtures of alumina compounds derived from alum.

There are upwards of 600 sorts of biscuits made, and a general descriptive catalogue would doubtless be very useful to retailers.

The piles of biscuit tins in shops and warehouses are often a severe strain to the eyes of assistants hurriedly seeking particular kinds. Manufacturers, in fixing upon the colours or the arrangement of names on labels, might consider this, so as to simplify the task by some methodical arrangement of the tints. Why not offer a prize to assistants for the best plan?

With the view of assisting retailers who may be asked for a kind of biscuit they are not acquainted with, the following descriptive list is submitted.

The sizes and prices named are those of the principal manufacturers:—

Explanations.—The figures in brackets indicate the leading manufacturers, thus: (1) means Carr & Co., (2) Crawford & Sons; (3) Gray, Dunn, & Co.; (4) Huntley & Palmer; (5) Jacobs & Co.; (6) Macfarlane, Lang, & Co.; (7) Mackenzie & Co.; (8) McVitie & Price; (9) Peek, Frean & Co.; (10) Powell, Son, & Co.; (11) Walker & Co. Rd. means that the title is registered by the makers; *Plain* means unsweetened; C or R denotes circular or round biscuits; D, Diameter; W, width; L, length; T, thickness; and the approximate dimensions are given in inches or fractions of an inch. Prices vary with different makers, and the figures named are merely approximate.

Names of Biscuits, Makers, Description as to Shape, Size, Weight in Square Tin or Half Tin, Price per Cwt., &c.

A B C or ALPHABET (4, 7, 9, &c.).—Small round, sweetish, a letter on each, 320 to lb., 39/-.

ABERNETHY (7).—Several sizes, ¼d., ½d., and 1d., also smaller; thin, round, sweetish. See separate mention in body of book.

AFRICAN (4).—L 2½, W ¾, furrowed surface, rich, sweetish, 90/-.

AFTERNOON TEA (4).—12 sorts mixed, sweet.

ALBERT (4, 7).—C. D 2½, T ¼; sweetish, 50 to lb., 7½lbs. in tin, Osborne or Arrowroot type, and named after the late Prince Albert.

ALBERTA (4).—Oblong, L 2½, W 1¾, T ¼, 58/-.
ALGERIA (1, 4, 5, 7).—Oval, L 2¼, W 1⅛, T ⅜, pointed ends, sweet, brown icing underneath, 60 to lb.
ALMOND DROPS.—See special reference to these in body of book.
ALMOND RINGS (1, 2, 4, 5, 6, 7, 8, 9, 11).—C, D 2½, T ¼, hole in centre, sweet, 66 to lb., 8lbs. in tin.
ALPHABET.—Small ovals, L 1, W ¾, with a letter stamped on each, 300 to lb., 42/-.
AMERICAN CRACKERS (6, 9).—Plain light squares, 29 to lb., 35/-.
ANGEL CAKES (8 Rd.).—Spongy and sweet, bun shape, D 2, T 1¼, rose flavour, piece of fruit on top.
APRICOT WAFERS (5).—4¼lbs. per tin, retail price 1/4 per lb.
ARABIAN (7).—A nicely flavoured biscuit.
ARCADE (9).—Round, rich, cocoanut flavour, 54 to lb., 59/-.
ARROWROOT (2, 4).—Circular or oval, various sizes, sweetish, pricked.
,, Rich, C, D 2¾, T ¼, not pricked, sweetish, 72 to lb.
,, (4,) Thick
,, (4, 5) Thin, C, pale colour, figured border, scalloped edge, 76 to lb., 6¾lbs. per tin, retail price 7½d. per lb.
ATLANTIC (5, 9).—Round, plain, 200 to lb., 40/-.
BALMORAL (2, 3, 4, 6, 9).—Three shapes (crown, rose, shell).
BALTIC (1).—Plain, very thin, C. D 2¼, T ⅛, 120 to lb., white and closely pricked.
BANQUET (9).—A sponge finger biscuit with chocolate icing, 80 to lb., 98/- per cwt.
BANQUET WAFER.
BATAVIA or BATAVIA NUTS (7, 9).—Round, sweet, 38 to lb., 32/-.
BATH or BRIGHTON (4).—Round, sweetish, 7¼lbs. per tin.
BATH OLIVER (FORTT'S).—A high-class, slightly sweetened, but troublesome to make. (See separate article.)
BEATRICE (4).—Sweetish.
BENGAL NUTS (9).—Ginger bread, 68 to lb., 26/-.
BIARRITZ (4).—A long dessert biscuit, sweetish.
BISCOTTES DE PARIS or BISCUITS DE PARIS.—The French name for *Rusks*.
BISCUIT POWDER (7).—See prepared foods.
BON BONS (2, 3, 5, 6, 7, 8, 9, 11).—Gingerbread, 32 to lb., 37/-.
BON BOUCHE (4).—Dry, sweet, citron flavoured.
BOUDOIR (4, 9).—A sort of sponge finger, sugared on on side, flavoured with vanilla, sweet, and very delicate.
BRAEMAR (3).—A superior unsweetened biscuit.
BRAZIL (4).—Sweetish.
BREAKFAST (1, 4, 7, 9).—Plain white rusks, oblong, L 3 W 2½, T ½, 50 to 60 to lb., 3lbs. in a tin, 8½d. per lb. retail.
BRIGHTON (2, 3, 4, 6, 7, 9).—Round, D 1¾, similar to Dover but smaller.
BRILLIANT (3, 9).—Various shapes, mixed, sweetish, 144 to lb., 31/-.

BRITANNIA (4).—Large plain, with a figure of Britannia marked on each.
BROWN COLLEGE (4, 6, 7, 9).—C, D 3¼, T ¼, brown meal, 26 to lb., 6½lbs. in tin, very like Granola.
BRUNSWICK (6, 9, 11).—Round, meal, sweetish, 32 to lb., 61/-.
BUFFET (4).—Plain.
BUTTER (1, 2, 4, etc.)—C, D 3, T ¼, closely pricked, not sweet, but rich.
BUTTER CREAMS (5).—10¾lbs. per tin, 6d. per lb.
BUTTERSCOTCH (5).—C, D 3, T ¼, very sweet, brown, smooth surface, 50 to lb.
BUTTON NUTS (4).—Very small, sweetish.
BUXTON (4).—Sweetish.
CABIN (1, 2, 4, etc.).—C, D 3, similar to Captain and Lunch, round, plain, 20/-.
CAFE NOIR (1, 2, 4, 5, etc.).—First made by Carr & Co., oblong, L 3, W 2, T ⅙, 30 to lb., brown icing underneath, 6¾lbs. per tin, 5½d. per lb.
CALAIS (8).—Round, with triangular projections, D 2½, T ¼, 64 to lb., sweetish.
CAMP (4).—Plain.
CANADA (9).—Round, plain, light, 44 to lb., 39/-., 4¾lbs. in tin.
CAPE (4).—Sweetish.
CAPTAIN (6).—Round, various sizes, plain, like lunch, 38/-.
,, Thin (2, 3, 5, etc.).—C, D 2, T ¼, light colour, plain cracker, 100 or 120 to lb.
,, Thin Oval (1, 5).—6¼lbs. per tin, 5d. per lb.
CARICATURE (4).—Sweetish, each biscuit bears a humerous portrait stamped on it.
CARLSBAD SUGAR WAFERS.—See separate reference in body of book.
CARNIVAL (6, 11).—Oblong, L 3, W 2, T ¼, 70 to lb., 6lb. tins, scalloped edges.
CASINO (4).—Sweet, 5lbs. in tin, 84/- cwt., 1/- per lb.
CELERY (9).—A crisp savoury biscuit with celery flavour for use with cheese or butter, square tins, 47/- cwt.
CHALET (4, 7).—Oblong, L 3, W 1, T ¼, sweetish, rough surface, like Colonial, 70 to lb.
CHARCOAL (Bragg's).—Special sizes, 9d. per lb.
CHARLOTTE (9).—Oblong, striped with two different coloured doughs, sweet, 96 to lb., 58/-. Introduced 1894.
CHARM (1, 2, 4, etc.).—Various shapes, slightly sweet, 264 to lb., 36/-.
CHATEAU (3, 9).—Light brown finger, vanilla flavour, for dessert, 100 to lb.
CHEAPSIDE (4).—Sweetish.
CHEESE (1, 2, 4, 7, etc.).—Oval, L 2¾, W 2, T ¼, scalloped edges, plain, 60 to lb., 5lbs. in tin, 38/-.
CHERRY CREAMS (9).—A round sandwich with scalloped edge, and containing a layer of cherry-flavoured cream.
CHERRY WAFERS (9).—Cerise colour, finger shape, similar to Venice wafers in size and style, but sandwiched with cherry-flavoured cream.
CHICAGO (7).—Oval, L 3, W 2½, T ⅛, cracker like, white colour, 58 to lb., 5¾lbs. per tin, 5½d. per lb.
CHIEFTAIN (7, 9).—Oval, slightly sweet, 72 to lb., 40/.
CHOCOLATE (6).—9lbs. per tin, 9d. per lb.

CHOCOLATE WAFERS (4).—Sweet.
CLIFFORD.—C, D 2¾, T ⅛, top marked with pea-like globules, 44 to lb., sweetish.
CLUB.—Sweetish.
COBURG CAKES (9).—Round, sweet, with peel, 34 to lb., 63/-. Similar to Louise but with small pieces of peel in centre.
COCOA-NUT DROPS (4).—Sweet.
COCOA-NUT RINGS (4).—Sweetish.
COCOA-NUT WAFERS (4).—Sweet.
COFFEE (3, 4, 9).—Oblong, L 2¾, W 2, T ¼, sweetish, 50 or 60 to lb., 78/- cwt.
COLOMBO (9).—Crisply baked *cocoa-nut*.
COLONIAL (1, 2, 3, 5, etc.).—Oblong, sweetish, L 2½, W 1⅛, T ¼, 96 to lb., rough furrowed surface, 7lbs. per tin, 5½d. per lb.
COMBINATION (3, 4, 5, etc.).—30 odd fancy shapes mixed, sweet.
COMEDY (9).—About 30 humorous figures, 248 to lb., 36/-.
CONSTITUTIONAL (1).—A selection of small mixed.
CONVERSATION (4).—Sweetish.
CORNISH CREAM (4, 9).—Plain, white, crisp, milk biscuit for use with "Cornish Cream" or cheese after dinner.
CORONET (4, 9).—Round, D 2, impressed with a crown, scalloped edge, sweetish, 56 to lb., 35/-.
COWSLIP.—A nicely baked, fully coloured and crisp variety, retailed at 6d. per lb.
CRACKNELS (3, 4, 11).—See separate article in body of book.
CREAM CRACKERS (2, 3, 4, 5, etc.).—Plain, white, sq., L 3¼, W 3, T ⅛, 50 to lb., 3½lbs. in a tin, 6d. per lb.
CREAM SANDWICH (9).—Two layers of biscuit sandwiched together with a sweet creamy material, 48/-.
CRINKLE (4).—Finger shape, white and curly, L 3, W ¾, 56/-.
CROQUETTE (4).—Sweetish.
CROWN (4, 9).—Large round, D 5, Royal Arms in centre, scalloped edge, slightly sweet.
CUDDY (4, 9).—Plain, hard, C, D 4, T ⅜, 14 to lb., 7½lb. tins, 20/-, 3d. per lb.
CYCLIST (8).—Oval, L 3, W 2, T ¼, 48 to lb., 6lbs. in tin, slightly sweet.
CYCLIST LUNCH (1).—A sandwich biscuit specially intended for cycling and picnics, 42/-.
CYPRUS CAKES (4).—Lemon, chocolate, coffee, rose.
DAINTY CAKES (1, 2, 9).—Raspberry and black currant, round open jam tartlets, or cross between a biscuit and a tartlet.
DAISY or DAISY CAKES (1, 2, 9).—Currant, Madeira, o Sultana, like Fairy Cakes, but smaller.
DEMI-LUNE (1, 2, 4, etc.)—Vanilla flavoured, sweetish, 47 to lb., 47/-.
DERBY (1, 2, 3, etc.).—Ginger, Small, and Vanilla, C, D 3, T ¼, sweetish, 50 to lb.
DESSERT (2, 3, 4, etc.).—Mixed sorts, 16 kinds, sweet, richly ornamented, 115/-.
DIADEM (4).—Medium, 28 kinds, sweet.
DIGESTIVE (1, 2, 3, 4, etc.).—C, D 3, T ⅜, hard, plain, brown meal like Brown College.

DINNER (4, 9).—Plain, small, and crisp, for use with soup, etc., instead of bread.
DOMINOES (4).—Sweet.
DOROTHY CAKES (2, 3).—7lbs. in a tin.
DOT (9).—Very small, sweetish, 940 to lb., 46/-.
DOUBLET (1 Rd.).—Light, plain, circular cut, but folded in oblongs before baking, 53/-.
DOVER.—Round, D 2½, slightly sweet, 56/-.
DRESDEN TEA CAKES (1, 8).—Rich cocoa-nut flavour.
DUCHESS (3, 8, 9).—Rich light finger, 120 to lb., 112/-.
DUDLEY (9).—Square, sweet ginger flavour, 56 to lb., 40/-.
DUTCH RUSKS (4).—Sweetish.
EASTBOURNE (4).—Sweetish.
EMPIRE (4).—Sweetish.
ELFIN CAKES (11, Rd.).—Round or shell shape.
EUROPEAN MIXED (9).—Sweet assortment, 58 to lb., 55/-.
EXCURSION (4).—C, D 2¾, T ¼, plain, with caraways, 32/-.
FAIRY CAKES (2, 3, 5, etc.).—Currant, Madeira, Sultana, and iced, D 2, T 1, soft, sweet, 7½lbs. in a tin, 7½d. per lb.
FAMILY (4).—Sweetish.
FANCY RUSKS (4).—Sweetish.
FANCY SHORTBREAD (4).—Sweetish.
FANCY SWEET (4).—24 kinds, sweet.
FAROLA (6).
FAVORITE (4).—Lemon or vanilla, sweetish.
FAY (4).—Sweetish.
FILBERT (4).—Imitation filbert, baked in moulds, split lengthwise, sweetish, 80/-.
FINGER GINGERBREAD (2, 3, 4, 7, etc.).—L 3, W 1½, T ⅜, 40 or 60 to lb., 10lbs. in tin, Ginger-nut type, sweetish.
FINGER RUSKS (4).—Sweetish.
FIVE O'CLOCK TEA (5).—6½lbs. per tin, 7½d. per lb.
FLORAL (9).—Various shapes, sweet, 65 to lb., 69/-.
FOLKESTONE (4).—Sweetish.
FRAME FOOD (7).
FRUIT (4).—Sweetish.
FRUIT DROPS (1, 4, 7).—C, D 1¾, showing 3 or 4 currants on top, sweetish.
GARIBALDI (1, 2, 3, etc.).—Sq., L 2¾, W 2½, T ¼, wit currants inside, sweetish.
GEM.—Small, sweetish, 500 to lb., 30/-.
GENOA (4).—Sweet.

GERMAN RUSKS (4).—4¾lbs. in tin (see separate mention).
GINGERBREAD CAKES (1, 2, 3, etc.).—Round or sq., sweet, ¼d., ½d., and 1d., 35/- to 85/-.
GINGERBREAD LEAF (4).—Sweetish.
GINGERBREAD FINGERS (4).—10½lbs. per tin, 10d. per lb.
GINGER NUTS (1, 2, 3, 4, 6, 7, etc.)—Light brown colour, hard, tough, sweetish, rich, 42 to lb., C, D 2¼, T ⅜, 9lbs. per tin, 6d. per lb.
GINGER SNAPS (1, 3, 7, etc.).—See separate reference to Ginger Snaps and Ginger Nuts in body of book.
GINGER WAFERS (4).—Sweetish.
GIPSY CAKES (8, 9).—Not unlike Fairy and Daisy Cakes, but cheaper (retail at 6d).
GLACE (4, 6, 7).—Oblong, L 2½, W 1, T ⅜, sweet, smooth icing underneath, 70 to lb., 1/- per lb.
GOLDEN NUTS (8).—Round, sweet, 32 to lb., 52/-.
GOLF (7).—Contain meat extract, and are intended for sportsmen, tourists, and others.
GOSSAMER (9).—Square, plain, light, 50 to lb., 39/-.
GRAMPIAN (4).—Sweetish.
GRANOLA (6, Rd.).—C, D 3¼, T ¼, brown meal and sweetish, very like Brown College, 8¼lbs. per tin, 8d. per lb.
GRANVILLE (9).—Sq., sweetish, 66 to lb., 54/-.
GROSVENOR (7).—Apricot, marmalade, raspberry, and strawberry flavours.
HEALTH (9).—Sq., plain, flaky, 56 to lb., 67/-.
HEART CAKES (9).—Sweet, soft, 36 to lb., 62/-.
HONEY DROPS (4).—Sweet and soft, about twice the thickness of a florin, golden brown colour.
HOTEL (9).—Round, plain, crackers, 200 to lb., 40/-.
HOLIDAY (4).—Sweet.
HOUSEHOLD (4).—Metropolitan mixed, 19 kinds, sweet.
ICE CREAM (1, 2, 3, 4, etc.).—Various colours and flavours, rich, 254 to lb., 192/-.
ICE WAFERS (4).
ITALIAN FINGERS (9).—Sweet, 66 to lb., 54/-.
ITALIAN WAFERS (2).—Thin, oblong, L 3¼, W 1¾, T ⅛ inch, gimped edges, sweetish, 96 to lb.
IVANHOE (11).—9lbs. in a tin.
JAM FINGER (4, 9).—Raspberry and currant, sweetish, a finger sandwich, 52 to lb., 56/-.
JAMAICA (4, 7, 9).—Sharp-cornered oblongs, L 2, W ⅝, T ½, sweetish, 84 to lb., 78/-.
JUVENILE (4, 9).—Very small, sweetish, 1,180 to lb., 28/-.
JEWEL CAKES (9).—Sweet, soft, and round. In centre a sugared fruit confection, made in four different flavours.
KETTLEDRUM STICKS (TORRENCE).
KIMBERLEY (GINGER CREAM) (5).
KINDERGARTEN (4).—Sweetish.
KINGSTON.—Crisp and with a ginger flavour.
LEAFLET (9).—Various leaves, sweetish, 220 to lb., 66/-.

in a tin, retail at 6d.
LEMON DESSERT (4).—Sweet.
LEMON FINGER (1, 2, 3, etc.).—Sweet, lemon flavour, 128 to lb., 28/-.
LEMON NUTS (1, 7, 9).—Gingerbread, lemon flavour, 48 to lb., 48/-.
LEMON RINGS (1, 2, 4, etc.).—Similar to Almond Rings, but lemon flavoured (see separate mention).
LEMON WAFERS (4).
LEOPOLD (4).—Three-cornered fancy shape, sweetish, 150 to lb., 70/-.
LEVANT (9).—Oblong sultana sandwich, 48 to lb., 46/-.
LITTLEFOLKS (4).—Sweetish, 7½lbs. per tin, 6d. per lb.
LORNE (4, 9).—Oblong, L 3, W 1, rich, light, 95 to lb., 136/-.
LOUVRE (9).—Round, soft, light and sweet, 64 to lb., 68/-.
LUNCH (4).—Several sorts:—City, Edinburgh, Eiffel, Fancy, Fine, Halfpenny, etc. (see "*Lunch Biscuits*").
MACAROONS (AMERICAN) (5).—8lbs. in tin, 11½d. per lb.
MACAROONS (ITALIAN) (4).—Several kinds and shapes, very rich and sweet, pieces of almonds, sugar, or comfits on top.
MADEIRA (4, 5, 8).—Thin fingers, L 4, W ¾, T ⅜, Savoy type, sweet, white sponge, 120 to lb., 8¼lbs. in tin, 1/1½d. per lb.
MADELEINE CAKES (4).—Sweet.
MADRAS (8, 9).—Large cocoanut drops, 25 to lb., 44/-.
MADRID (1).—Cocoanut flavour.
MAITRE D'HOTEL (4).—Sweet.
MAIZENA, Rich (4).—C, D 1¾, T ¼, "Maizena" in circle, sweetish.
,, Wafer (2, 3, 4, etc.).—See separate mention in body of book.
MALTA (4, 7, 9).—Oval, sweetish, 92 to lb., 62/-.
MALVERN (9).—Round, thin, sweet, 72 to lb.
MARGATE (6).—7lbs. in tin, 6d. per lb.
MARGUERITE (9).—Finger, sweetish, 96 to lb., 62/-.
MARIONETTE (4).—Sweetish.
MARIE (1, 2, 3, 4, 5, etc.).—Sweetish, C, D 2½, T ⅛, 7 to lb., 8lb. tins, 60/-, *Osborne*, *Oswego* type, 7½d. per lb.
MARLBOROUGH (9, 11).—Round, soft, sweet, almond flavour, 108 to lb., 56/-., 4lb. tins.
MASCOTTES (9).—Round, rich, soft, 58 to lb., 90/-.
MATLOCK (5, 7).—C, D 2¼, T ¼, sweetish, light colour, flat smooth surface, 68 to lb.
MAUD (9).—Round, sweetish, 80 to lb., 38/-.
MAYFAIR (11).—Sweet Sandwich, in various flavours.
MEAL (4).—Plain.
MEAL WAFERS (4).—10½lb. tins, 7½d. per lb., sweetish.

MEAT.—See separate reference in body of book.
MEDALLION (4).—Small oval, L 1¼, W 1, *Pearl*, *Gem*, and *Alphabet* type.
MEDIUM (1, 3, 4, etc.).—About 15 fancy rare shapes, mixed sweet, 64 to lb., 60/-.
MELLIN FOOD.
MELROSE (6, 3).—C, D 2¼, T ¼, 50 to lb., 7½lbs. in tin, *Osborne* type.
,, Gingerbread (3).
METROPOLITAN (1, 2, 6, etc.).—Mixed sweet, 112 to lb.,28/-.
MIDLOTHIAN OAT-CAKES (7).—Made from finest Midlothian oatmeal.
MILK (4, 5, 6).—C, D 2½, T ⅛, plain, closely pricked, figured border, 70 to lb., 6lbs. in tin, 36/-, 5d. per lb.
MINARET (6, 7, 9).—Iced finger, sweet, 96 to lb., 33/-.
MIXED (4, 6, 7,).—Sweet (several sorts:—Champion, Harvest, Household, London, National, People's, Rich, Venetian), 8¼lbs. per tin, 10d. per lb.
MIXED CREAMS (4).—Sweet.
MIXED PEOPLES (7).—8lbs. per tin, 5d. per lb.
MODEL (7, 9).—Small figures and stands, several shapes, 300 to lb., 36/-.
NAPLES (4).—Sweet.
NATIONAL (9).—Round, sweetish, 52 to lb., 50/-.
NELSON (2, 3, 9).—2 inch square, a sort of fruit sandwich, like Garibaldi, 54 to lb.
NIC NAC, FANCY (4, 6, 7, 9).—Small, various shapes, sweetish, 200 to lb., 32/-.
NICE (4).—Pronounce *nee-see*, sweetish, 6¾lbs. per tin, 6½d. per lb.
NILE (3, 5, 9).—Round, sweetish, 86 to lb., 42/-, 7¾lbs. i a tin, 5½d. per lb.
NONPAREIL (4).—Plain.
NONSUCH (4).—C, D 1¾, T ¼, rich, 73/-.
NURSERY (4).—Sweetish, round, and light, 17 to lb., 54/-, 3½lbs. per tin, 7½d. per lb.
OATCAKES or SCOTCH FARLS.—Various shapes and sizes, plain and sweet.
OATEN (4).—Sweetish, oblong, L 2½, W 2, T ¼, coarse oatmeal, 20 to lb., 11 lbs. in tin, 64/-, 8½d. per lb.
OATEN WAFERS (5).—10lbs. in tin, 7½d. per lb.
OATMEAL WAFERS (7, 8).—Sq., D 3, T ⅛, sweetish, 3 to lb., 6lbs. in tin.
OBAN (4).—Ginger snaps, sweetish.
OBELISK (9).—Iced finger, 104 to lb., 35/-.
OBERTINE.—See separate notice in body of book.
OCEAN (4).—Plain.
OPERA WAFERS (4).—Sweet, 8½lbs. in tin, 1/7 per lb.
ORANGE DESSERT (4).—Sweet.
ORANGE DROPS (4, 5, etc.).—Round, sweet, 76 to lb., 55/-.
ORIENTAL (4, 7).—Almond flavoured and sweet, shape of a hen's egg split lengthwise.

OTTOMAN (3, 5, 6, etc.).—Round, sweet, cocoanut, 50 to lb., 45/-.
OVAL THIN CAPTAIN (4).—L 2, W 1¾, thinner than Captain, 40/-.
PAGODA (9).—Ornamented finger, sweet, 130 to lb., 36/-.
PALACE (4).—Sweetish.
PARK (9).—Round and rich, 60 to lb., 74/-.
PARMENA (6).—A savory cheese biscuit.
PASSOVER CAKE (for Jews).—Apply to Solomon & Son, 26 Widegate Street, or Levy Bros., 31 Widegate Street, London.
PATENT SANDWICH.—Chocolate, cocoanut, and raspberry.
PEARL (4, 5, etc.).—Small oval, sweetish, 194 to lb., 39/-.
PEOPLE'S MIXED or COMBINATION.—20 varieties, mixed, sweet, 96 to lb., 39/-.
PETIT BEURRE (4).—2½ sq., T ¼, sweetish, 48 to lb., Osborne or Marie quality, 8¾lbs. in a tin, 6½d. per lb.
PETTICOAT TAILS (or Petites Gatelles) (8).—A Scotch dainty in round tins.
PIC-NIC (1, 2, 4, etc.).—Oval, L 1¾, W 1½, sweetish, 100 to lb., 42/-.
PICKWICK (4).—Sweetish.
PITCAITHLY BANNOCKS (8).—Flat round cakes of oat, rye, or barley meal.
PLAIN WAFERS (4).—Plain.
PRAIRIE (4).—Plain.
PRESBURG (4, 6, 7, 9).—Oblong rusks, L 2, W 1, sweetish, rough surface, encrusted with chopped almonds.
PRINCE (4, 9).—Round, sweetish, 28 to lb., 34/-.
PRINCE OF WALES (1, 5, 9).—Round, plain, 32 to lb. 30/-.
PRINCESS (1, 9).—Finger, very light, 116 to lb., 224/-.
PRINCESS SHORTBREAD.—Small cakes of cocoanut and chopped almonds.
PROMENADE (9).—Iced, Lemon, Chocolate, Vanilla, and Coffee flavours.
QUEEN (4).—Sweetish.
QUEEN DROPS (1, 2, 3, etc.).—Fruit Drops with currants, 58 to lb., 90/-.
RASPBERRY WAFERS (4).—Sweet.
RATAFIA.—See separate references in body of book.
READING CRACKERS (4).—Plain.
REGALIA (5).—2½lbs. per tin, 8d. per lb.
REGINA (9).—Various shapes, sweet, 116 to lb., 60/-.
RHINE.—Two oblongs stuck together, L 3, W 1⅛, T ½, scalloped edges.
RICH TRAVELLER (4, 7).—Oval, L 2¼, W 1½; see separate reference in body of book.
RIFLE NUTS (5, 9, 11).—Gingerbread, 126 to lb., 37/-.
RIVIERA (4).—Sweet.
ROCKET (9, 11).—Round iced, various colours and flavours, decorated on one side, 70 to lb., 46/-.

ROLL (4).—Finger shape, L 4, W ¾, T ½, 56/-.
ROSE (5, 7, 9).—Rose shape, sweet, 92 to lb., 71/-, 2½lbs. per tin, 8d. per lb.
ROSETTE (6, 9).—Cocoanut drops, 80 to lb., 91/-.
ROYAL (1, 3, 4, 7).—C, D 2⅜, T⅛, figured border, Queen's head in centre, 72 to lb., sweetish.
,, Dessert.—Rich, mixed, 16 sorts, 102 to lb., 115/-.
RUGBY CAKES (9).—Sweet, soft, 18 to lb., 58/-.
RURAL (Zoological) (4).—About two dozen animals, sweetish and brittle, 140 to lb., 7lbs. in tin.
RUSKS, Fancy (4).—Oblong slices, toasted, for children, luncheon and dinner use, L 3, W 1½, T ¾, 45 to lb., 3lbs. in tin, 86/-, 1/- per lb.
,, German (2, 4).—See separate reference in body of book under *Rusks*, 2½lbs. per tin.
SALOON (4, 5, 9).—Large round, thin, and plain, 26 to lb., 36/-, 5½lbs. per tin, 4d. per lb.
SALT (4).—Plain.
SANDRINGHAM (6, 9, 11).—Oval, rich, light, 136 to lb., 68/-.
SANDWICH (1) Introduced 1894.—Several layers of doug of different colours and flavours, Rasp, Cocoa-nut, Chocolate, Coffee, etc.
SAVOY (1, 4, 5, 8).—Two sponge cakes stuck together, white and very sweet.
,, Fingers.—L 3, T 1, 40 to 50 to lb.
SCHOOL (1, 4, 9).—Round, sweetish, 100 to lb., 28/-.
SEA BISCUITS.—See separate mention in body of book.
SEASIDE (5, 9).—Round and sweetish, 56 to lb., 35/-.
SEED (4).—Plain.
SHORTBREAD.—See separate article.
SHREWSBURY (4).—Sq., L 1½, W 1⅛, T ¼, furrowed surface, rich and sweetish, 150 to lb., 86/-.
SMYRNA (4, 5, 6, etc.).—Sweetish Currant Drops, 92 to lb., 58/-.
SNOW FLAKE (3, 4, 9).—Finger shape, plain, 60 to lb., 39/-.
,, DROPS.—Very small, plain.
SOCIAL (4, 5, 9, 11).—C, D 2½, T ¼, 60 to lb., 7lbs. in tin, baked brown, sweetish.
,, Thin (1, 4, 7, 9).—C, D 2¼, T⅛, sweetish, 70 or 80 to lb.
SODA (1, 4, 7, 9).—Round, plain, 48 to lb., 58/-.
SOIREE (4, Rd.).—D 1¾, floral border, rich and sweetish.
SPICE NUTS (4, 5, 7, 9).—Sweetish, round, and spiced ginger nuts, 41 to lb., 60/-.
SPONGE (3, 4).—See separate mention in body of book.
SPONGE RUSKS (4).—Sweet.
SPRAY (4).—Plain.
STAFFA (6).—Small jam sandwich.
STAMINA MALT (7).—Contain extract of malt, very strengthening and sustaining.
STAR (4, 5, 9).—Round, sweetish, and iced, 108 to lb., 47/-.

SUGAR WAFERS (4).—Sweet, oblong sandwich shape, L 3½, W 1¾, T ⅛, various flavours (very popular in France).
SULTANA (4).—Sweetish.
SUPPER (2, 3, 4, etc.).—Plain, light cracker-like, C, D 3, T ⅓, 30 to lb., 4lbs. in tin.
SWEET (9).—Round, sweetish, 22 to lb., 35/-.
SWISS (4).—Sweet.
SYLVAN (9).—Leaf-shaped and sweetish, 136 to lb., 56/-.
TABLE (1, 4, 9).—Pencil-shaped, L 3, sweetish, 245 to lb., 40/-.
TANTALLON CAKES (6).
TEA (4, 6, 7).—Round, D 3, T ⅓, 30 to lb., sweetish, and soft, 6 or 7lbs. in tin, 6½d. per lb.
TEA RICH (4).—Sweetish.
TEA RUSKS (4).—Sweetish.
TEA THIN (4).—Sweetish.
THEOBROMINE (4).—Chocolate colour and flavour, in small tins.
TIFFIN (2, 7, 9, 11).—Finger shape, sweetish, 100 to lb., 42/-.
TOAST (4, 5, 9).—Square, plain and light, 36 to lb., 49/-, 5lbs. in a tin.
TOPS AND BOTTOMS (4, 9).—See separate reference in body of book.
TOURIST (2, 3, 4, etc.).—C, D 2¼, T ¼, pricked, sweetish, 40 to lb., 42/-.
TOWN (4, 9).—Large, round, sweetish, 11 to lb., 34/-.
TRAVELLER (4).—Plain, C, D 2, T ¼, 48 to lb., 28/-.
TRINIDAD.—A round cocoa-nut variety, lightly baked and of good flavour, retailed at 8d.
TUNBRIDGE or TUNBRIDGE WELLS (4, 6, 7, 9).—Caraway, Citron, Ginger, and Lemon flavours, C, and oval, rich, sweetish.
TYROL (4).—Sweet.
UNIVERSITY (4, 9).— Roll, sweetish, and light, 140 to lb., 72/-.
UNIVERSITY PLAIN (4).—Plain.
VANILLA MIXED (9).—Rich, mixed, 96 to lb., 71/-.
VANILLE (4).—C, D 2¼, T ¼, notched border, 75/-. VANILLA (4).—Sweet.
VARIETY (4).—28 kinds, sweet, 7¾lbs. per tin, 8d. per lb.
VENICE (4).—Sweet.
VENICE WAFERS (9).
VICTORIA (4 and 6).—Round, triangular, and heart shapes.
VICTORIA NUTS (1, 4, 9).—Sweetish, gingerbread, 32 to lb., 54/-.
VICTORIA WAFERS (5).
VILLAGE (4).—Sweetish.
WALDECK (7).—Sweetish, and prettily designed for five o'clock tea.
WALNUT (2, 4, 5, 7, 9).—Imitation walnuts, sweetish, 70 to lb., 50/-, 2½lbs. in tin, 10½d. per lb.

WATER (4, 5, 6).—C, D 3, T ⅛, 52 to lb., 6½lbs. in tin, plain, white colour.
" Small; see separate mention in body of book.
WATER CRACKERS (4).—Plain.
WAVELET (9).—Oblong iced, pine-apple flavour.
WATER FLAKED (5).—5½lbs. in tin, 4½d. per lb.
WHEATEN (1, 4, 7, 8, 9).—Oblong, sweetish; see separate reference in body of book.
WHEATMEAL (4).—C, D 2¾, T ¾, rough, coarse, brown, short but sweetish, 30 to lb., 10½lbs. in a tin, 56/-.
WHITBY.—Round and sweet, with currants, 30 to lb., 42/-.
WHITE NUTS (4).—Sweet.
WHOLEMEAL (9).—Thick and round, 42 to lb., 64/-.
WINDSOR (11, Rd.).—D 1¾, 6 or 8 currants on top.
WINDSOR WAFERS (5).—10lbs. per tin, 11d. per lb.
WINE (6, 7).—7¾lbs. per tin, and 6½d. per lb. YACHT (4).—Plain.
YORK CAKES (4).—Oblong, L 2½, W 1, sweet and spongy, with currants, 64 to lb.
ZEPHYR (1).—Square, very like American crackers.
ZELLER WAFERS (9).—Very thin, crisp, and of novel shape; 10 varieties: Anchovy, Celery, Cheese, and Oriental Cheese are all savoury, while Regina, Cigarette Ice, Cigarette Vanilla, Imperial, and Cone are sweet. The savoury four are intended for use with butter, and the sweet with cream, custard, ices, etc.

Bitter Almonds. — See *Almonds.*

Bitter Oranges. — Also calle
Bigardes, Seville Oranges, Sours, etc.

These oranges are all classed a
Bigaradia, but the origin of this term i
uncertain. They sometimes take th
name of *Seville,* the city around whic
large quantities of them have bee
grown, ever since the Moorish conqueror
first planted the orange tree i
Andalusia. These come packed i
boxes containing 300 oranges, each bo
measuring 28 by 14 by 10½ inches
The tree is a very handsome one, an
the hardiest of the orange genus. It
said to have been derived from a gra
of the citron and orange trees.
shoots freely in England, producing larg
leaves, and is noted for its beautifu
flowers, or "orange blossoms," which ar
of a delicate white colour, with
delicious odour, and when made int
wreaths are very popular decorations fo
brides, as emblems of purity. Th
costly *oil of neroli* is also made fro
these flowers.

Bitter oranges, or "*Sours,*" as the
are called by dealers, also come fro
Portugal, Malaga, Palermo, Syria, et
Perhaps the best come from Denia, o
the east coast of Spain, but those fro
the Canary Islands fetch the highes
prices. They have a roughish skin
rather thick, acrid, bitter pulp, an
are generally large in size. Th
tree is large, having a hard wood
and in many places develops a trunk
great dimensions; the leaves are of
brilliant, agreeable, green colour, ar
matic, lanceolated, and with a broadly
winged petiole.

These oranges are considered ver
valuable, and, having very bitter rind
are mostly used for making into marma
lade, orange wine and other bitte
tinctures, candied peel, and for flavou
ing *Curaçao.* The fresh peel is als
carefully dried in spring for the use
distillers, druggists, and perfumers.

Bitters. —F. *Amers.*
A conventional term for certain bitte

ıd often spirituous liquors in which ıtter herbs, roots, or barks have been eeped and soaked.

That of the hotels and public-houses usually a compound made by steeping ıtter substances, such as orange peel, ıssia, aloes, gentian, cardamom seeds, ıd other aromatics in weak spirits enerally gin) for some eight or ten days ıd then straining, a little sugar or rup being added subsequently.

Rue Gin is a preparation of this class. he well-known tonic or *bitter cup* is ade of quassia wood, and the roasted ips of this wood are often used as a bstitute for hops in embittering beer.

Prairie Bitters is an American bever- e common among the hunters and ountaineers of the West made with a nt of water and a quarter of a gill of ffalo-gall. The best known kinds of tters are *L'Amer Picon* (with 40 per nt. of alcohol), *Angostura Bitters*, *nnecamp Bitters*, *Bordeaux Bitters*, *randy Bitters*, *Calisayne Bitters*, *avre Bitters*, *Hop Bitters*, *Khoosh tters*, *Orange Bitters*, *Peruvian*, *crestat Bitters* (with 47 per cent. of ohol), *Stoughton Bitters*, *Wild erry Bitters*, and *Wine Bitters*, all of ich are put up in bottles of various es and prices.

Doctors say they are very bad for the mach, and soon affect the brain.

As most of the Bitters contain more less of spirit, a license is necessary.

Bonnekamp or *Maag-Bitter*, the eciality of an old Antwerp innkeeper, is ry popular in Holland and Belgium, ıere it is usually taken with Holland's ı. It was first manufactured in 1815 a Hollander of that name. There e now nearly as many makers of Bonnekamp" as of Worcestershire uce, but the original recipe is the operty of the Masquelier family, who rchased both the recipe and the inn out 1855.

Bitumen.—See *Pitch*.

"Bivouac" Tins of Meat.—See *nned Meats*.

Blackbeetle Powders.—See *Beetle wders*.

Blackberries.—See *Brambles*.

Black Bread.—See *Rye*.

Black Cloth Reviver.—See *Cloth Revivers*.

Black Currants.—F. *Cassis*. (Also known as *Quinsy Berries*.)

These are classified as *Ribes nigrum*. The trees are raised in the same way as the gooseberry, but the best fruit and fullest crops are from new wood of the previous year's growth. The best varieties are "The Black Naples," "Lee's Prolific" (very sweet and good cropper), "Carter's Champion," and "Baldwins." The *Black Naples* (or "Black Grape") is now almost universally cultivated. It bears short bunches, but the berries are very fine and large. Black currants are often bottled whole (see *Bottled Fruits*), and large quantities are made into jam. Wines, jellies, and lozenges are also prepared from the fruit juice.

The Russians preserve black currants in brandy, and the Irish in whisky, in same way as cherries are often preserved in England. The Russians also ferment the juice with honey, and so form a strong and palatable wine.

In some districts the young leaves of the bush are often used as a substitute for tea, and one or two of the buds or half a small leaf will import to black tea the flavour and fragrance of green tea.

There is no easier fruit to grow than black currants, which require no training nor staking whatever. Unlike gooseberries and other currant bushes, suckers are induced to grow up from the roots every year, as the finest fruit is grown on the young wood; the older and weaker wood is cut out as soon as the fruit is gathered, to allow the tree to confine its energy to new shoots, which should be left 5 or 6 inches apart.

It is one of the best paying fruits to grow, prices never being lower than £22 a ton.

Black Currant Jam.—(See also *Jams*.)—The fruit should be gathered while quite dry, and be carefully picked

over. In some factories the currants are strigged by machinery and not by the fingers. The currants are simply spread on a band, which is ever passing upward, and at the top is a revolving brush, which removes the strigs from the fruit, and the currants roll down ready for boiling. A good jam may be made as follows:—Put 14lbs. fresh fruit and three quarts of water into a copper pan (iron gives a metallic taste to the jam) and stir till it has boiled ten minutes. Then add 16lbs. white sugar, stir well, and boil about twenty minutes; then pour it into a pan-mug, or bowl, and pot while warm. Some people rub the fruit through a sieve, but that spoils the flavour entirely, so does the use of common sugar; besides, the currants themselves have a great tendency to congeal, and if good sugar be used they do not require so much boiling. It must be remembered that Black-currant jam is more liable to candy than any other jam.

Black Currant Jelly.—(See also *Table Jellies.*)—This is a compound of mucilage and acid. It should be prepared from perfectly ripe fruit, and may be made thus:—Boil 10lbs. large fresh fruit, quite ripe and sound, and 2 quarts of water, for 10 minutes, pour into a jelly bag, and let it strain 6 or 8 hours; then add 1lb. of white sugar to every pint of juice, and boil till nearly as stiff as treacle; remove scum, and pot. It loses its power of gelatinising by prolonged boiling.

Some jam manufacturers pass the fruit through fine wicker sieves, and then put the pulp into flannel straining bags, to extract the juice before adding the sugar and boiling. (The skins and seeds of the fruits are afterwards used in making second quality jam.)

Currant jellies are best fresh-made, and, being very liable to ferment, should not be kept long in stock. The fruit juice is usually stored by the manufacturers, and the jellies only made as required. To preserve them for a long time would require an amount of sugar that would render them far too sweet.

Adulterants: Glucose, apple jelly starch, acetic acid, and aniline dyes.

Black Currant Syrup. — The sweetened juice of the fruit put up in bottles for the use of chemists in dispensing and for confectioners.

A spirituous liqueur or cordial made from black currants, is very popular in France (see *Cassis*). Large quantities of the berries are grown around Dijon, Angers, etc., for this purpose, but strange to say, very rarely is jam or jelly made from them.

Black Currant Wine.—See *British Wines.*

Black Ink. — See *Writing Inks.*

Black Jack. — (See also *Burnt sugar colouring.*)—A shop name applied to a preparation of burnt or roasted sugar which is used to adulterate or darken coffee, and so give it a semblance of strength.

It is sometimes called *Coffee Finings.* One kind is used for colouring vinegar, another for rum, brandy, etc.

The name "*Black Jack*" is also given by miners to a sulphide of zinc, or blend of 67 of zinc and 33 of sulphur, and in some districts, Birmingham, for instance, a confection of senna passes under that name.

Black Jack Coffee.—In America is a low grade of coffee from Germany. It is a mixture of the dead and green berries of the poorest quality which have been picked out of ordinary coffee, and really unfit for consumption. To deceive the public into believing it to be pure, a coat of glaze is put over the berries which hides the deception and makes them appear bright and inviting.

Black Lead. — Du. *Potloot;* F. *Plombagine, Potelot;* G. *Pottlot, Reissblei;* It. *Miniera di Piombo,* Sp. *Plumbagine* or *Minerale de Chumbo, Piedra Mineral de Plomo,* Welsh *Plwn Du.*

The name "Black Lead" is one of convenience, and is universally understood, although it is not technically correct, because the mineral really contains no *lead* at all, and the term

herefore a misnomer. Its proper name ould be *Graphite* or Plumbago. Lead elts readily, but this article will stand ery great heat, and, in fact, so incom- ustible is it that in conjunction with lay it is the very substance chosen for aking crucibles or melting-pots.

It consists chiefly of a mixture of arbon, with alumina, silica, lime and xide or sulphate of iron, and is found n many parts of the world, but mostly n Bavaria, Spain, America, Siberia, and eylon, sometimes in beds, but often in etached pieces at random, and is arketed in blocks, lumps, chips, and ust, as low as 5/- per cwt., according o purity from other earths, and refined y sifting and washing with hydrochloric cid. It is then worked into a paste by rinding in a sort of mortar mill, or dged stones, with a mixture of paraffin il, water, naphthalene, and soap. When of proper consistency this is ressed by hydraulic or hand power into locks of any size desired.

The circular blocks are spun round in die, so as to leave a glossy surface on op. Lead has been found purest in orrowdale, Cumberland, where it used o fetch as much as 25/- to 30/- per lb.

Since the Cumberland and also the iberian deposits of graphite or plum- ago have been exhausted, the chief upply of this mineral has been derived rom Bohemia, in the south of which ountry, near Ochwartzbach and lurgan, deposits of pure graphite are ound in the gneiss, accompanied by rystalline limestone.

The mines and works at the former lace are owned by Count Schwartzen- urg, and those at the latter by the easants. These two centres yield the urest graphite now available, that of rumman being far inferior. The ineral, not being sufficiently pure o be sent away as natural gra- hite, is ground in mills constantly aversed by a stream of water that takes p the powder, which afterwards settles nto "mud," and when this mud layer as attained a sufficient thickness, it is subjected to a pressure of 88lbs. per square inch in a filter press. The re- sulting cake, containing more than 20 per cent. of water, is then dried in a stove heated to 90° or 100° (mean 203°F.) for 24 hours. Excellent gra- phite is now sold in Bohemia at about 15/- per cwt.

The best qualities are soft, marking the paper easily, and rubbing out quickly, also quite black (not slate- coloured) and without much lustre until well rubbed.

Low-priced black leads are usually made from Austrian or Hungarian lead, costing about £3 a ton, and with glucose and water can be produced, wrapped, labelled, and boxed at a total cost of about 6d. a gross for 1 oz. blocks.

"Black lead" is used for making pencils, and for polishing stoves and other metal work; also, like grease, for diminishing friction in machinery, belt- ing, and in fire-arms.

Special Firms.—Barringer & Co., Ltd. (manufacturers), Rock Valley Mills, Mansfield, Notts; "Enameline" Manu- facturing Co. (Enameline Paste), Drury Buildings, Water Street, Liverpool; W. G. Nixev. Soho Square, London, W.; Morris & Jones (all saleable kinds), 13, 15, 17 Sir Thomas Street, Liverpool; Punch Polish Co., Hick Street, Birming- ham (F. Cooke, proprietor).

Black Pepper. — F. *Poivre noir;* Ger. *Schwarzen pieffer;* It. *Pepe nero;* Jav. *Mariha;* Lat. *Piper nigrum;* Malay, *Lada;* Port. *Pimenta preta;* Sp. *Pimienta negra.* (See also *Pepper, White Pepper*, etc.)

The small dark unripe berries or fruit of *Piper nigrum* or Black Pepper vine, a native of the East Indies, and now cultivated in Sumatra, Java, and many other tropical countries.

The tree, generally propagated by cuttings or suckers, is a sort of shrubby climbing vine trained by poles or other trees some 10 or 12 feet high, but will grow 20 feet high if allowed.

It has a soft stem and broad tough leaves, which grow singly, and it fruits

when three or four years old, the long fruit-spike jutting out from the side of the twig exactly opposite the leaf, each spike containing 20 to 50 peppercorns.

The plant yields two crops a year, of 5 or 6lbs. each, for ten or fifteen years, but is in perfection at its seventh year; although after the third year of planting the summer crop is inferior to that of the winter, and, of course, seasons vary; while some regions never yield but very inferior growths indeed.

The spikes or twigs are usually gathered when the berries begin to change from green to red, and the berries are rubbed off by hand, spread on mats, and dried in the sun. They are afterwards winnowed, and then form the wrinkled and dark pepper-corns of commerce.

When the time arrives for plucking and curing, great care is necessary to attain the best results, for, in the wet season, the crop may be too soggy, and in the dry season become too woody and fiery, as ripening is destructive of flavour and aroma. Curing by artificial heat is the method in vogue on large plantations, but sun-curing, when properly done on matting, is better. The practice of "swelling the crop" is not uncommon among the Chinese and native planters in the pepper countries by the addition of wild pepper, as well as berries not akin to the pepper family; not to mention a modicum of sticks, stones, and dirt, but this fraud is generally tabooed by British and French planters, though dirt will adhere to the hull under the best system; therefore, crude pepper used at home should always be "shotted" in water, quickly washed, and the floaters rejected with the dirt.

If left too long on the tree the berries turn paler, but lose part of that aromatic, pungent, hot taste for which they are noted. In drying, the succulent part of each berry becomes contracted and wrinkled, the corrugations being much raised and describing a kind of elevated net-work; it is then also that it loses its redness and turns black. That which has been gathered at the proper time shrivels least, but if plucked too soon it generally becomes broken and dusty.

Black and white pepper are really both the same berries, the white being manufactured by removing the dark outside covering of the berry; but the black is more pungent than the white on account of the acrid resin, known as piperine, and a volatile oil, contained in the skin or fleshy part. Pure black pepper contains about 2½ per cent. of this crystallisable piperine and about 2 per cent. of the essential oil, with only 5 to 5½ per cent. of ash. Samples with more than this proportion of ash may be considered adulterated.

As with many other articles, the various growths and qualities of Black Pepper corns are easily judged when brought together, but difficult enough when alone; and there are very few persons who could correctly separate the various growths and identify each sort with certainty.

The weight of a handful is the usual mode of judging quality, the grades being technically known as heavy, half-heavy, and light corns.

According to Chevallier,

		grammes
100 Penang Corns should weigh about		6·249
100 Malabar Corns	ditto.	6·053
100 Sumatra Corns	ditto.	5·147
100 Trang Corns	ditto.	4·573
100 Tellicherry Corns	ditto.	4·507

but merchants consider Malabar is generally the heaviest. To increase the weight of the corns, they are sometimes steeped in brine for about 24 hours, but a close examination will detect the fraud.

Steel mills are found better than stones for grinding pepper; the stone mills developing considerable heat, and wasting much of the aroma, besides producing a "burnt" flavour.

In the ground peppers supplied to retailers, Malabar, Penang, and Sumatra are usually mixed, the first to give weight, the second strength, and the third, colour.

Ground Black Pepper is also now often largely made up from the *Pepper Shells*, or husks, obtained in preparing the White Pepper.

Pepper is one of the most wholesome and useful of the spices. With persons in ordinary health it has the effect of stimulating the stomach gently to the performance of its functions, and is particularly serviceable to persons who are of cold habit or who suffer from weak digestion. Used in moderation, pepper decidedly promotes the appetite and aids digestion, and, as to the quantity the system can take care of, as much as a spoonful is sometimes given in a little water in severe cases of flatulency. The natives of India highly esteem pepper as a stomachic, and make a strong infusion of it to drink by way of creating an appetite and to cure gout and palsy. They have also a method of making a fiery spirit of fermented fresh pepper with water, which they use for the same purpose, and also prescribe in cases of cholera morbus; a liniment for rheumatism is distilled from the berries, while the root of the vine is employed as a tonic, stimulant, and cordial.

Malabar pepper (which reaches England by way of Bombay) and Penang are considered the best. Good pepper has firm round corns, not too deeply wrinkled, and does not easily break or crumble in the hand; it is also heavy and skins readily in water. A yellow tinge on the outside pericarp betrays over-ripeness and consequent loss of strength; the inner seed should be hard, round, and smooth, and of greyish-brown colour.

Black Puddings. — F. *Boudins;* G. *Blüt Wursten;* Port. *Chorizos de sangue;* Sp. *Morcillas;* W. *Guaedogen.* These are made from pigs' blood and fat, with groats, herbs, and spice. The whole is usually enclosed in a piece of the intestine of the pig and boiled, but it is afterwards also fried. They are ordinarily genuine, but often prepared in small, close, and unhealthy dwelling-rooms; and as blood rapidly decomposes, they may become tainted before being cooked. Black puddings are mainly distinguished by the seasonings used in their preparation. In the *Cheshire* caraway and coriander predominate, while the *Salop* has none of the former and very little of the latter. The *Staffordshire* contains equal quantities of salt, pepper, marjoram, and pimento, with twice as much of thyme. The *Yorkshire* contains twice as much of marjoram and thyme as of pepper and salt, also a little savoury and lemon thyme. The *Stretford* is a highly-seasoned variety containing equal portions of salt, pepper, marjoram, mint, and thyme.

An average recipe for Black Puddings:—Boil 6lbs. of groats half an hour in a loose cotton bag, then empty them into a bowl, and while hot add 3 or 4 oz. powdered seasoning mixed as follows:—3 parts of thyme, 3 parts of marjoram, 1 of mint, 2 of salt, and 1 or 2 of black pepper. Some makers add 1 part of savoury, pimento, or coriander.

After well mixing the seasoning with the groats, add 6lbs. of leaf lard cut up in ½-inch squares and 2 gallons of blood. Stir well, fill into skins, tie, and then boil slowly about twenty minutes in water which has been coloured black by the addition of 1 oz. of logwood to each gallon of water. Some makers use soda to heighten the colour, but it is apt to make the puddings burst. In France beet leaves and onions are also used.

Black Rice. — A Burmese variety, grown in Chittagong, and known there as *Joomah Choul.* It is much more glutinous and nourishing than ordinary rice, being rich in albuminoids (9·2 per cent.) and in oil (2·2 per cent.), and thus approaches more nearly the nutrient ratio of a complete food. A pigment contained in the dark integument is identical with that to which is due the red colour of grapes, black currants, and many other fruits, flowers, and leaves.

Black Soap or **Farrier's Soap.**—A coarse kind of soft-soap, made from fish oils and caustic potash.

Sometimes tar is added, also iodine, bromine, creosote, etc.

Black Sugar.—See *Liquorice.*

Black Varnish. — (See also *Komo Black.*)—A natural varnish or lacquer, the product of the Burmese, Martaban, or other varnish trees, especially the sap of the *Melanorrhœa usitata*, which is a thick viscid grey turpentinish substance, which soon turns black on exposure and dries very slowly.

It is said nearly every vessel in Burma, whether for holding liquids or solids, is lacquered with this substance, as well as furniture, idols, temples, etc. Black varnish is also made from, say, 48lbs. asphaltum, 10 gallons boiled oil, 7lbs. red lead, 7lbs. litharge, 3lbs. white copperas, 8lbs. dark gum amber, fused, 2 gallons hot linseed oil, and 30 gallons turps. Boil the asphaltum, boiled oil, red lead, and litharge for two hours, then add the amber and boil again for two hours, or till a little mass when cooled may be rolled into pills. Lastly thin down with turps.

Blacking (for boots and shoes).—Da. *Skoesvarte;* F. *Cirage;* Ger. *Schuhwichse;* It. *Nero da rigner le scarpe;* Port. *Graxa;* Sp. *Betum;* Sw. *Skosvarta;* W. *Dû esgidiau, duad.* (See also *Harness Blacking, Liquid Blacking*, and *Shoemakers' Black, Brown-Boot Polishes*, etc.

Space will not permit all kinds of paste and liquid blackings to be described, but they are usually made of powdered bone-earth or ivory-black, sperm, linseed, or other oil, coarse sugar or molasses, vinegar, or sour beer, strong sulphuric acid (oil of vitriol), copperas, and sometimes a little gum arabic.

Each manufacturer has of course proportions and methods of mixing peculiar to himself; but generally all the materials selected are ground together in a paint-mill until the paste is smooth. The average percentages for Paste Blacking are:—

Bone black... ...	... 13·0
Molasses	... 68·0
Sulphuric acid ...	... 12·0
Soda	... 4·5
Fat or oil	... 2·5

A cheap and popular example.—1 cwt. lampblack, ½ cwt. soot, 46lbs. treacle, 1½ gals. of oil substitute, 32lbs. sulphuric acid, and 3 gals. of water.

The four first articles are mixed with a wooden spade, the acid is next diluted with water and then mixed up well in the other, covered over, and left for a day or two. It is then put into an enamelled copper and stirred well, while simmering for about 10 minutes. When thus "cooked," it is removed from the fire, cooled, and given a final stirring with the spade.

It is then ready for filling into tins.

For paper rolls or square packets the paste is spread into wooden trays, and stacked away to stiffen for a week or 10 days. It is finally cut up with a "plough" and wrapped.

Blackings made in this manner are always moist, shine as quickly as those made with the usual material, and after two or three applications give a softness to leather that other blackings do not.

The papers are prepared by soaking them in boiled oil, then a bunch of them are placed under a press to squeeze out excess of oil; and after being left in the press all night they are pulled apart, and dried ready for use.

Varieties of blacking free from sulphuric acid have lately come into the market, a highly bituminous schist being used instead of bone-black in their manufacture. These paste blackings are simply mixtures of say, fat 2·5, molasses 63·5, and black schist 34·0, with the occasional addition of an antiseptic. The black schist, however, loses about 20 per cent. on ignition.

There is more science in blacking than appears on the surface, and not every person knows why well "blacked" boots shine. The fact occurs through the blacking having in suspension myriads of tiny, angular particles of plumbago or "black lead." When spread out upon the boot, such a drying or oxidation takes place as to leave the crystals of plumbago—facing in all directions indifferently—involved in a very stiff "bog," as it were, of the agglutinating

medium. And in this state plumbago particles reflect such rays of light as fall on them indifferently in every direction, irregularly or dispersively, as it is termed. They wear the dull aspect so characteristic of dispersively reflective bodies. But now comes the function of the brush. This smooths down the jagged particles of carbon, stroking them into such positions that their more or less flat surfaces all lie in the same plane as that of the leather of the boot. Then regular or specular reflection can take place at these uniformly directed facets, and the boot begins to shine. The pleasing effect is still more heightened as the brush is continually applied, for quite impalpable atoms of plumbago are swept off from the residual hillocks or protuberances, and are deposited in intervening hollows, thus accentuating the smoothness of the whole.

Shoe-blacks in London were at one period styled the "Black Guards," but afterwards becoming a low set of rogues and cut-throats, the term "black-guard" began to be applied to any low ruffian.

One of the old City of London companies, yclept "*The Worshipful Company of Japanners,*" originated with shoe-blacks.

Throughout the middle ages blacking is not mentioned, and the boots worn were of the brown colour natural to leather, blacking only coming into use in the 17th century.

Although there is no great difficulty in making common blacking, it is quite a different thing to produce a high-class article, one that will yield the most brilliant gloss without injuring the leather. Charles Day & Richard Martin, London, first began blacking making in Tavistock Street, Covent Garden, then at 97 High Holborn, and now in the Borough Road. The firm has for over a century been turning out a type of blacking which has, so far, puzzled all imitators. We believe that firm was the first in England to commence as blacking makers only, and an old museum print, dated 1801, caricaturing Mr. Charles Day, under the caption of "A gloomy *Day* at Brighton," shows that he must have been almost as popular then as the modern firm is to-day. Many persons get their boots blacked without any regard as to what sort of blacking is being used, and the worst blacking being, as a rule, the cheapest, we have a ready illustration of the proverb, "Penny wise, pound foolish," for their boots are quickly spoilt and new ones required.

The enormous business now carried on by Day & Martin not only shows the lasting worth of a superior formula, even in blacking, but also testifies to an ever-increasing number of more thoughtful housekeepers all over the world, who are willing to pay freely for a superior article when they can get it.

To make new boots polish more easily, get some clean pipe-clay and make into a paste. Cover the boots all over the outside with it and let it dry on thoroughly; when dry, brush off with a clean brush. Then black all over with *good* blacking, use plenty of elbow grease, and you will have a capital polish.

An increasing amount of blacking is coming from France, Germany, and America. The black and brown polishes of a Boston maker also have secured a firm hold here; while several leading bootshops in London get their supplies from France.

Besides bottle blackings, a large quantity is imported in barrels from Germany and France, being finished and made up for sale afterwards. The solvents used include spirits, turpentine, and wood alcohol.

Special Firms.—Day & Martin, Ltd., London and Liverpool (see adv. end of book); Geldart & Co., Old Swan, Liverpool—telegrams, "Sapolis," Liverpool; C. Windschuegl & Co. (materials for), 1 Leadenhall Street, London, E.C.

Bladder Nuts. — See *Pistachio Nuts.*

Bladders for Lard, etc.—Easily prepared. Cut off the loose fat, wash the bladders in a weak solution of chloride of lime, and rinse in clear water.

when drying, blow them tight, tie the necks to keep them expanded, and hang them up.

They are very useful to tie over jars, pots, etc.

Blaeberries or **Bleaberries.**—Scotch names for *Bilberries.*

Blanched Almonds.—See *Almonds.*

Blanc-Mange Powders (pr. *Blomange*).

These are often made of dried sago-meal, adding to each pound 15 drops of essence of lemon and 12 grains of mace.

Some consist of five parts of cornflour to four of white sugar.

Special Manufacturers.—De Carle & Son, Fruit Drink Works, Norwich. Gardner's patent "Rapid" Sifter and Mixer, freely used for above. Prices, from 50/- to £100. Catalogues from William Gardner & Sons, engineers, Gloucester.

Bleaching Powder.—See *Chloride of Lime.*

Blended Butter.—This industry, as introduced into Ireland from Cherbourg, by Squire Porter, an Irish landlord of Belle Isle, Lisbellaw, County Fermanagh, owes its origin to a great disparity in prices of ordinary Irish butter and the best Continental importations, and especially the butter coming from Cherbourg. The latter generally obtained 25 to 30 per cent. higher prices than the Irish. Thanks to the above indefatigable squire, what had long been attempted by individual butter merchants is now worked by local combinations of farmers for themselves. Fresh butter is bought in the markets at all the towns within 20 or 30 miles of Bantry. It is classed 1, 2, and 3 in the markets, and each grade packed in large block tin boxes about two feet every way covered with butter paper to keep it clean. These tin boxes are put inside larger wooden boxes, with lids, each box holding about 200lbs. of butter.

On arrival at the mill, ordinarily the evening of the same day, it is re-examined carefully by experts, so as to correct any error that may possibly have occurred at the market examination, for one bad lump would spoil the lot. After this final classification each batch is separately and thoroughly washed in a machine with rollers. If the butter be hard it is tempered with warm water, else it would be lumpy and streaky, and would not take the dry salt evenly and keep well.

The butter is then passed to the blending machine, which is within a few feet. This machine is raised in the centre, and the rollers taper to the centre of the table, so that the butter is not more worked near the centre than the outside; and is capable of blending 500lbs. at a time. If additional colouring is considered desirable, it is added here. When well blended the butter is placed in a large trough near the salting machine, a sufficiency of salt is spread over the butter by the experienced operative, and it is then passed twice through the salting machine (a French vertical machine), which completes the process.

The butter is now ready for packing in small rolls or in firkins or boxes. A hand machine shapes and weighs rolls of 1lb. or 2lbs. each. As the perfectly blended product is put on rail or boat the morning after each market, the whole business only occupies a day.

The advantages of these blending mills over creameries are:—(1) The butter milk is kept at home by the farmer; (2) the farmer's wife or daughter may still make the butter in their own dairy, in accordance with given rules, so that it may be readily classified in the local market; (3) the cost and trouble of conveyance of the fresh milk to the creamery is thus avoided.

Blending Mills or "*Grading factories*" of Brittany and Normandy may be owned either by an individual or a company: and the agents in France often women, attend all the local markets within a reasonable distance. The farmers or butter makers of the district bring to these markets the butter churned at home, *uncoloured* and *unsalted*, and in the lump, simply wrapped in a clean

cloth in a basket. The agents practically fix the prices of the different grades of quality, which vary in number, according to the size of the factory.

The French butter-makers also lay themselves out for winter production, and the winter product is greater than the summer. But the lateness of the seasons in their districts enables winter dairying to be carried on under more favourable conditions than is possible in the United Kingdom, and this is an important advantage. The French butters, fresh and unsalted, are therefore very popular in London and in the South of London districts.

Blended Teas.—(See also *Teas.*)—It is only since 1882 that the blended tea systems have become really important features in the trade. It may be said to have sprung from the practice of mixing Indian and Chinese sorts. By all appearances it is destined to become more and more popular.

The old school of wholesale merchants were at first, and many of them still are, much opposed to the policy of supplying retailers with teas ready blended. They prefer the retailer continuing on the old lines of buying and stocking several kinds, and making up his own mixtures for the various canisters. Such a retailer is always likely to be wanting one kind or another, and is consequently a better customer than one who buys teas ready blended, and only in small quantities as required. No doubt many retailers are excellent judges of tea, who know what and where to buy, and how to mix, but such are only few in number in comparison with the great majority who have not had the opportunity of acquiring similar proficiency in the art. It must be obvious the latter in bargaining for separate kinds are no match for wholesale firms and travellers who have made teas a life study. But in the case of ready mixed teas the scientific difficulty of mixing properly devolves on the wholesale blenders. This is the chief *raison d'être* of the blended tea system, and instead of the retailer, who has nowadays a vast number of other articles to purchase and to sell, wasting his time liquoring and haggling over scores of samples of tea, as often deciding wrongly as rightly, possibly oftener, and instead of having to lay out his cash, or credit, in securing a large stock of many sorts and qualities, all he has now got to do is send the wholesale tea blenders a sample of his 1/-, 1/3, 1/6, 2/-, or 2/6 mixture and inquire the prices at which they (the blenders) can match the sort required; when he gets it he must, of course, see that it is equal in quality and flavour, for, as practical grocers well know, consumers can get so accustomed to any tea of fair quality as to think all others unequal to it. By so managing the ordinary dealer can now buy tea ready blended by those who understand it best, at much less cost. The business is indeed much simplified; the tea may be bought as required, and sold before it becomes stale and flavourless by exposure or age. This last point becomes accentuated when we reflect that nearly all the tea now coming to this country, instead of being Chinese or Japanese tea, and improving with age, is of Indian or Ceylon growth, and well known to deteriorate every month it is kept; so not only is it found prudent to buy teas ready blended, but further to buy these blends fresh as possible.

As to how to blend teas, that is an art we can scarcely here enter upon. Three or four books on the subject have been written with copious instructions, and those who desire to pursue the study will do well to procure "*Tea and Tea Blending*," 8vo., price 5/-, published by Eden Fisher & Co., 50 Lombard Street, London, E.C.; or "*Walsh's Tea Blending*," pp. 104, price $1, published by J. M. Walsh, tea expert, Philadelphia, U.S.A. Much valuable information may be gathered from both of them. The classes of most teas may, however, soon be recognised at sight, and the comparative merits of a few samples more or less closely ascertained by anyone after infusing for five minutes a small quantity (the weight of a sixpence) of each in four ounces of boiling

water in the small covered white sampling pots made for the purpose, and then carefully tasting and examining each as to colour, strength, body, flavour, and aroma, etc. The samples should be tested in the water of the district where the tea is to be sold and used. The appearance of the wet leaves and the sediment is also to be noticed. But their current values can only be determined after careful trial by skilled tea-tasters with sensitive and regular palates. A Pekoe may be readily distinguished from a Souchong, but the Souchong of certain planters or districts may have more value than other Pekoes. No strict rules can, in fact, be laid down how to judge teas, but with black teas generally the darker the liquor the stronger the tea, and the nearer the colour is to a salmony brown the better the flavour. On infusion it should emit more or less of subdued fragrance, and in taste should be mild, bland, and sweetish, with an agreeable astringency.

The dignity or *amour propre* of many old grocers revolts against the idea of buying ready blended teas, and this resistance is, of course, encouraged by the adroit traveller and others who benefit by it, but there are various features of the system well worth deeper consideration.

A grocer's business reputation among his customers depends largely on his teas, and uniformity of each blend is of primary importance. His 1/6 tea will always be the same, and so should every other quality. The customer expects to find it alike all the year round. But it is practically impossible for an ordinary retailer who blends his own to ensure exactness. He cannot conveniently always blend alike. His stocks are not uniformly fresh; some sorts have grown old and flat; others are probably fresh; and the result is an observable variance in strength or flavour, which zealous consumers will soon notice. Professional blenders on the markets have much better opportunities of selection and devoting their whole time and skill to the business of blending and matching, it is obvious these are advantages much in their favour. They know best where to buy, how to buy, and how to blend.

There is now a spirited competition among wholesale tea blenders. Houses of first-class repute now blend teas, and will sell for cash one or two chests cheap as ten or twenty, so that the single-shop retailer may really buy his teas almost as well as the largest firms.

Special Firms.—Brooke Bond & Co., Ltd., 17 and 18 St. Dunstan's Hill, London, E.C.; Cave, Johnson & Co., White Hart Court and Alderman's Walk, Bishopsgate, London, E.C. (ESTABLISHED 1879); pioneers of the wholesale Blended Tea Trade, and supply "Matchless" Blends from 1/- to 2/4 (duty and carriage paid); Morris & Jones, 13, 15, and 17, Sir Thomas Street, Liverpool, also sole agents for the "Household" Tea Co.'s blends, and the "Wungacherra" Tea; Spencer, Turner, & Boldero, Lisson Grove, London, N.W. (see *High Caste Ceylon* and *Silver Packet Teas*).

Bloater Paste, Potted Bloater, etc.—The bloaters used for above require much care and judgment in their selection. They should be plump and well smoked; those technically called "shot" fish, or spawned, being poor and of inferior flavour, are undesirable.

The fish are first skinned (the heads and tails thrown away), and then minced very fine by hand or in a machine. Lard and spices are next added, and the whole well mixed, after which it is filled into fancy pots, patent jars, or tins, and hermetically sealed down, sometimes with lids of soft tin, which may easily be cut with a pocket-knife. These preparations, however, will not keep good very long even then. They are often found wrong on being opened, and should not be kept in stock long.

Bloaters.—A name given to herrings when they have been slightly smoked or "bloated," and are intended to be eaten soon afterwards.

Bloaters are reckoned in baskets of 150 to the basket. Yarmouth is celebrated for its bloaters.

Block Juice.—See *Liquorice Juice.*

Blood Oranges. — These come mostly from Malta, Sicily, and Spain, and are remarkable for the peculiar blood red or mottled crimson colour of their pulp and reddish rind. Some people fancy, and have gravely asserted, that this is owing to the trees having been grafted on to pomegranate stocks, and that these hybrids are often crossed and recrossed till some of the fruits show only slight traces of the red colour; but Mr. Neville-Rolfe, H.M. Consul in Naples, declares this to be a complete fallacy. When grafted, both fruits—oranges or pomegranates—retain their original quality, and neither borrows anything of the other.

Palermo Bloods are almost the latest in the market, not arriving till Spring. Malta furnishes abundance of oranges, but they do not keep so well as ordinary Spanish or Portuguese. These oranges readily take a flavour from any strong smelling substance near them, so should never be placed near onions, etc. When scarce and dear, pedlars have been known to prick the skins of ordinary oranges, and then subject them to a bath in a solution of Rocelline, the scarlet of Biebrich, so as to pass them off as "*Bloods.*"

Bloom or **Sun Raisins.** — These raisins, so called from the species of grape used, are dried on the vine in a similar way to Muscatels, but consist of a different kind of grape. They owe their name "bloom" to their blue glaucous surface, and, like Muscatels, are dipped in potash lye to soften the skin, favour the drying, and impart a gloss. They are imported mostly in boxes from Malaga, a city and sea-port in the south of Spain.

Blubber. — Da. and Sw. *Tran;* Du. *Thraan;* Ger. *Thran;* It. *Olio di Pesce;* Port. *Azeite de Pixe;* Rus. *Salo Worwannoe;* Sp. *Grassa.*

This is whale fat found between the skin and the flesh, about 6 inches thick. The use of blubber in the fish seems to be partly to poise the body and partly to keep off the water at some distance from the blood, thus keeping the fish warm in the coldest seas. Blubber is usually imported in casks and made into train oil. Average yield 2 to 4 tons from each whale.

Blue.—F. *Bleu;* G. *Blau;* It. *Azzur;* Sp. *Azul.*

The various preparations of blue are referred to under their respective names. There are three different sources of origin: Cobalt, Indigo, and Ultramarine, but the substances made up in several forms and used in the laundries as blues are all compounds of ultramarine, some being natural and some artificial. See Azure blue, Berlin blue, Blue Ochre, Cobalt blue, Indigo blue, Laundry blue, Liquid blue, Navy blue, Prussian or Royal blue, Saxony blue, Smalt blue, Soluble blue, Steel blue, Ultramarine blue, Washing blue.

Gardner's patent "Rapid" Sifter and Mixer, freely used for above. Prices from 50/- to £100. Catalogues from Wm. Gardner & Sons, engineers, Gloucester.

For all kinds of blue, apply to Keen, Robinson & Co., Garlick Hill, London, E.C., makers of Keen's "Oxford" Blue.

Blueberries.—Same as *Bilberries.*

Blue Mountain or **Golden Rod Tea.** — An infusion of the leaves of the *Solidago odora.*

Blue Ochre, or **Native Prussian Blue,** is a hydrate of iron, a light and permanent colour, but not in much request.

Blue Veiny Cheese.—See *Dorsetshire Cheese.*

Boar's Head. — The boar's head has been for ages in repute in the halls of the great for its flavour when roasted and stuffed with nutritious and appetising adjuncts. Even roasted wild pigs, so fashionable in the Norman and early English periods of our history, are still heard of; but most of the Wild Pigs and Wild Boars' Heads of the present day are obtained with less prowess and

delay than were necessary in the middle ages. (See *Pigs.*)

Bocal.—A French glass jar or vase without neck, in which preserved fruits, such as cherries in brandy, pickles, sweets, etc., are packed for sale. There are litre bocals, half bocals, quarter bocals, and large 4-litre bocals.

Bock-beer. — See *Beers.*

Bodega. — The Spanish name for a large wine cellar on a level with the ground.

Boer Tea or **Cape Tea.** — These are infusions with tea-like fragrance, made at the Cape of Good Hope from the leaves of *Cyclopia Vogelii.* The leaves and tops of two other species of this leguminous shrub are also used in South Africa as tea to promote expectoration, viz.: *C. genistoides,* called "Honig Thee," and *C. latifolia,* called "Bush Tea"; also the leaves of *Borbonia parviflora,* known as "Stekel Thee."

Besides the above, there is also a "Boer Tea" prepared in New Holland from the plant *Correa alba,* of the natural order *Rutaceæ.*

Boha.—A species of Turkish brandy obtained from dates, and exported from Tripoli in earthen jars known as *goul-goul.*

Bohea, Bohe, or **Bou.**—Any sort of inferior black tea, poetically named after two ranges of hills called Woo ye, Wu-i, or Bwi-i Hills, in the province of Fuhkien, China, where black teas are largely produced, and whence tea was first exported to England in 1666. The name was also given to the latest gatherings (September) of tea grown in other districts, but has now become almost obsolete.

The low-priced black teas are all mixed together and form the bulk of that exported from Canton.

Being made up of all sorts of common leaves, broken, flat, and of various colours and flavours, the ruddy infusion is generally insipid.

Boiled Oils or **Drying Oils** are for mixing with paints. They are prepared by boiling a small quantity of oxide of lead, litharge, white vitriol in linseed or nut oils till it is dissolved. The best oils for this purpose are linseed, poppy, rape, and walnut. Boiled oils may be much improved in brightness and clearness by exposure to the light of the sun for a few weeks, or by passing them through coarse, woollen, filtering paper. (See *Oils.*)

Boiled Sugars.—F. *Bonbons Anglais.* The lowest priced boiled sugars are, of course, those made from the commonest or cheapest sugars, and without the addition of butter or much flavouring essence.

Toffees and butterscotch are usually made of brown sugar, but the butter necessary in them, if *good,* carries the cost rather high.

Acid Drops, if of good colour, strong of acid, and well-flavoured, are also higher priced on account of the tartaric acid and the lemon flavouring.

Hand-made goods are, however, usually the most expensive sorts of boiled sugars, such as Rocks, Striped Sticks, etc., and particularly those sticks with names, pictures, stars, honeycomb, or other marks running through their whole length.

It would be futile to enter into length detail how each kind is made, and how each form differs from another in colour, shape, and flavour.

In making them much depends on the quality of sugar used, the length of time the sugar is boiled, the amount and quality of the butter, essences, etc., but most of all depends on the skill or ability of the workman.

Probably in no other trade are there so many "duffers"—men who profess to be efficient sugar-boilers, but who are practically only sugar-*spoilers.*

It is doubtful whether one "sugar boiler" in a dozen is really an efficient and reliable workman.

In the boiling of sugar different degrees of heat are necessary, and sugar boilers have long had conventional terms

of their own for denoting these degrees, which are rather curious :—

The "Pearl" is a name given to the form sugar usually assumes at about 220°.

The	Small Thread	228°
,,	Large Thread	236°
,,	Blow	240°
,,	Feather	242°
,,	Small Ball	244°
,,	Large Ball	250°
,,	Small Crack	264°
,,	Hard Crack	284°
,,	Caramel (*Burnt Sugar Colouring*)	360°

But it must be noted that in boiling sugars the actual degree of heat is not a reliable guide, some sugars being more affected by heat than others.

Some sugars, in fact, become pearly at 215°, while others may require 225°, so that it would be misleading to say sugar for such or such a purpose should be boiled to 220°. It is, therefore, more convenient to say it must be boiled to the "Pearl"—*i.e.*, till the sugar in the pan assumes a *pearly* appearance. If it be further boiled to about 228° it assumes what is called the *small thread*, that means if the tip of the forefinger be dipped in the sugar and then brought in contact with the thumb there will be noticed on again parting them a fine thread of sugar, and so are all the remainder of the above technical terms accounted for.

To prevent sugar turning grainy during the boiling process it is necessary to "kill" it with a little acid of some kind. An ounce of cream of tartar for 28lbs. of sugar is an average proportion.

When the sugar has been boiled to the proper degree, it is poured on to a slab sprinkled with a little oil and starch to prevent the sugar sticking. It is here flavoured, and when of the proper consistency is taken to the drop machines. A row of these machines stands along the centre of the room. The essential portion consists of two brass rollers, containing semi-moulds placed one above the other, and so arranged that the upper set coincide with the lower to form complete moulds. These rollers move in reverse directions, and as the soft mass of sugar passes between them, complete casts are made in the sheet. When hard, the individual drops are broken off. The moulds are all manner of shapes and sizes, from the common pear to the corrugated raspberry.

Boiled sugars, such as butterscotch drops, toffee, etc., cannot be made properly with margarine, the vegetable oil which enters so largely into the manufacture of that article not being absorbed by the sugar in boiling, hence it all settles on the surface of the goods and only gives them a nasty greasy taste and appearance.

Many manufacturers now use various proportions of liquid glucose along with their sugar, especially for hand-made goods, it being more economical than cream of tartar for killing the grain and also helps the pliability, but if used too profusely the sweets will soon go sticky.

The nomenclature of boiled sugars and other sweets is almost unlimited and somewhat confusing.

"Brandy-balls" would suggest that such articles contained alcohol, but practically such is not the case. In fact, Brandy-balls were first introduced into the trade by a teetotaler. He wanted to wean people of the craving for spirits, so he used extra strong peppermint flavouring, and called the product brandy balls. Foreign-made sweets sometimes contain a little diluted alcohol, but English makers use flavoured syrup free from spirits.

It is surprising how few retailers know that all boiled sugars should be kept well corked and in a dry place, but not exposed to the sun.

Thousands of bottles of sweets are spoilt every year by being opened and replaced on the shelves loosely or imperfectly stoppered, or without being closed at all. The result of course is, the air partly melts the sweets, they stick together, and the bottle is cracked or broken in trying to get them out.

Everyone who has to sell boiled sugars should learn the proper way to manage sticky goods, and the sooner it is done the better. Breaking bottles is costly, and no one will accept cracked ones. The bottle must *not* be knocked on the counter, neither must a shop-knife or other instrument be put into the bottle to loosen the contents, but when the stopper or cork has been withdrawn the bottle should be held on the left hand, and with the open palm of the right hand the mouth of the bottle should be sharply slapped in such a manner as to *drive air into the bottle* to "start" and loosen the sweets. There is a knack in doing this most effectually, and the novice should get some experienced person to show how it is done.

If the sweets are too firmly stuck together to be loosened in this way the whole bottle should at leisure be gently warmed in water till the sweets soften sufficiently to be extracted without breaking the bottle.

Such sweets may then be mixed and rubbed up in a little crushed sugar and sold as cheap "crystallised sweets."

Bole Armenian. — See *Armenian Bole.*

Bologna Sausages. — (See also *Mortadella.*)—These celebrated Italian sausages are made of large size from bacon, veal, and pork suet, chopped fine, or beaten into a pasty mass, and stuffed in large thick intestines. They are sold ready for the table, and are eaten without further preparation. They are generally used as a *hors d'œuvre*, and the Bolognese entertain a romantic adoration for this kind of sausage, declaring it to be "God's own food."

Bologna Ham.—See *Hams.*

Bologna Wines.—At Bologna they boil most of their wines, which are then called *vino cotto;* the unboiled they call *vino crudo.* They are nearly all sparkling sorts, and in their natural state effervesce like champagne.

Bombay Ducks. — See *Bummaloe Fish.*

Bommes Wine.—A white French wine, known as one of the *Sauternes*, produced in the Bordeaux district. Prices about 25/- a dozen in England.

Bon-bons.—Bon-bon is a reduplication of the French word *bon* (good), hence *bon-bons* is really equivalent to "goodies," "sweets," "sugar-plums," or "sugar confectionery."

Bon-bons Anglais is a French name for "sugar confectionery."

In England the term bon-bons is, however, confined to sweets and mottoes made up in fancily-folded paper of brilliant colours and adorned with gilt or pictorial ornaments. Many of these bon-bons are very elaborately and artistically designed and command a brisk sale—especially during Christmas and other festive occasions.

Bone Black.—See *Ivory Black.*

Bone Soap. — A soap made from cocoa-nut oil mixed with jelly from bones.

Bontia.—The wild olive of Barbados.

Books, Periodicals, etc., relating to Grocery and Allied Trades, see *Trade Papers, Books,* etc.

Boot Polishes. — See *Blacking, Brown Boot Polish,* and *Liquid Blacking.*

Boot Powder. — This usually consists of French chalk reduced to a powder by scraping or grating and coloured to fancy.

Used to facilitate the "getting on" of new or tight boots, a little of the powder being rubbed on the inside of the back heels, and insteps, or the powder may be sprinkled in the interior of the boot.

Boot Top Powder (pink).—Recipe: Mix 1 oz. oxalic acid, 1 oz. alum, ½ oz. cream of tartar, and ½ oz. isinglass; colour pink, with cochineal or annatto; and then boil the whole in a quart of water for 10 minutes.

Boracic Acid. — (See also *Antiseptics, Preservatives*, etc.)—Dr. Bond, of Westminster Hospital, and Professor Redpath, argue that it is perfectly harmless as a food preservative. Nearly 3,000 tons are produced yearly in the provinces of Pisa and Groseto, in Tuscany.

In the hands of a scientific man, the introduction of such a chemical in proper quantity might be perfectly safe, but danger arises when an article of food, passing through the hands of several middlemen, is heavily dosed by each; and, after all, there is the fact that if these antiseptics preserve goods before they are eaten, they also hinder digestion afterwards.

It is a comparatively easy thing for the grocer to find out for himself whether any of the articles he supplies contain boracic acid, although it is impossible for him to determine the amount without delicate chemical apparatus and some analytical training. All that is required to detect the presence of boracic acid is to soak the material for a few minutes in methylated spirit and apply a light; if boracic acid is present the alcohol will burn with a characteristic green flame. Borax, which is a compound of boracic acid with soda, can be detected in a similar manner, the addition of a few drops of strong sulphuric acid being made to free the boracic acid from the soda.

Borate of Lime.—A name for the crude material from which borax and boracic acid are made.

Borax or **Tincal.** — F. *Borate de Soude;* G. *Natriumborate;* It. *Borace;* Port. and Sp. *Borax;* W. *Math o halen.* Also chemically called borate or biborate of soda.)

A white crystalline native salt, or solid compound of soda and boracic acid, found in certain lakes in Persia, Thibet, Peru, Ceylon, and Chili, also in Nevada, California. Large quantities are obtained from the marsh lands of Italy.

The Crude Borax ordinarily forms a fine saline incrustation on the surface of certain sea shores, and is also found, more or less pure, at the bottom of several lakes and valleys in most of the volcanic regions.

It assumes one of two forms, either large hexagonal prisms or regular octagons.

In Chili, around Antofagasta, borate of lime is found in *nodules*, some of which contain over 40 per cent. of anhydrous borax, and the finest *frit* has been made from it with very little trouble. Twenty years ago the price of borax in England was about £100 a ton, and the world's produce was only about 3,000 tons. Now the consumption is about 50,000 tons, and the price only about £20.

Our supplies since 1864 have mostly come from Death Valley, California, and by boiling and crystallising this product it is soon converted into "*Concentrated.*" Pure borax is colourless, has a greasy feel, soapy smell, and sweetish alkaline taste. When heated it melts and runs into a sort of glass, and from this *false gems* are commonly made.

It is soluble in twelve times its own weight of cold water, or half its weight of boiling water. The word *Borax* comes from the Arabian word *burak;* and *Tincal* is an Arabian term given to the crude or impure borax found on the borders of lakes there, covered with an earthy, greasy coating, and of very rank smell. Borax is also extensively made by boiling together, in proper proportions, boric acid and carbonate of soda.

One of its chief uses is to facilitate the enamelling of metal vessels, signs, show tables, etc., glazing china and earthenware, and in brazing, soldering gold, silver, etc.

It is also largely used in leather dressing, glass-making, candle-making, photography; as a stiffening by calico printers, hatters, laundresses (partly in place of common soda), makers of insect powders, throat lozenges, etc., and for preserving milk, butter, meat, fish, and other tinned goods.

Many authorities, however, declare that a too liberal use of borax and boracic

acid in foods is injurious, that it sets up indigestion and diarrhœa. Dr. Stevenson, of Guy's Hospital, considers 0·25 per cent. of boric acid in butter, and 0·1 in milk quite innocuous and sufficient to preserve articles for a reasonable time; but milkmen and others are apt to employ it very carelessly, and often milk is twice dosed.

The great pork packers in America use two or three thousand tons a year. Its use in preserving hams and bacon would appear quite harmless, inasmuch as it is only used for covering the outside of the meat after coming out of pickle, and is usually washed off before use.

In fact, it is employed in 20 or 30 different trades, and is growing in importance.

It is a natural antacid, that is to say, it soon kills or neutralises all sourness.

A small piece of borax sucked is an excellent cure for sore throat. In the sick room, too, it is invaluable for sores, burns, bad ears, and all kinds of wounds, also as a disinfectant. Mixed with honey, it is known as *Mel Boracis* (Borax and Honey), and used as a remedy for the "thrush" with infants, and as a salve for skin eruptions. To make this properly, mix 64 grains, or one heaped-up teaspoonful, of pure powdered borax with one ounce, or two dessertspoonfuls of best honey.

Borax Water, an excellent wash, is prepared as follows:—Take of borax a penny packet, or 1 ounce, boiled water (allowed to cool) a pint and a half. Shake together—the water will dissolve about one per cent. of the borax; the remainder will fall in fine white powder to the bottom of the bottle. As the clear borax water is used, you have merely to fill up the bottle again with cold water (water that has been boiled is best), and this process can go on until all the borax has been taken up, which will not happen until you have filled up the bottle at least a dozen times. So, for twelve wine bottles of borax solution, the cost will be the small sum of one penny. This solution is exceptionally good for mouth wash, teeth, throat, the eyes, the skin, and for all toilet purposes.

Borax is sometimes adulterated with carbonate of soda.

Gardner's patent "Rapid" Sifter and Mixer, freely used for above. Prices from 50/- to £100. Catalogues from Wm. Gardner & Sons, engineers, Gloucester.

For pure English borax, apply to the Punch Polish Co., Hick Street, Birmingham (F. Cooke, proprietor).

Borax Soap Powder.—A kind of dry soap, usually made of about 5 parts powdered curd soap, 3 parts soda ash, 2 parts sodium silicate, and 1 part crude borax.

All well dried first, then mixed thoroughly and sifted. (See also *Washing Powders.*)

Bordeaux Wines. — (See also *Clarets.*)—Bordeaux is certainly the most important wine city in the world. The principal wines of the district include those of South-west, Gironde, Dordogne, Landes, Basses and Hautes-Pyrenees, Gers, Haute Garonne, Lot, Lot et Garonne, Tarn, Tarn-et-Garonne. The wines of the Gironde however are, more especially, considered the Bordeaux.

They are classed in four categories according to the site of vine lands:—Graves, Cotes, Palus, or Entre-deux-Mers.

Graves Wines include Chateaux-Margaux, Laffitte, Aubrion, Latour, etc., ect.; *Côtes*, St. Emilion, Fronsac, etc., etc.; *Palus* (signifying alluvial soil) Mont Ferrands, Qunsacs, etc. Of the *Entre-deux-Mers* (the district between the Garonne and the Dordogne) the best known are the wines of Brane, Sauveterre, and Cadillac.

The following are arranged in order of merit:—

Red Wines—Chateau-Lafitte, Chateau Margaux, Chateau-Latour (all known as Medocs), Haut-Brion, Branne-Mouton, Cos-Destournelles, Durfort, Gruan, Larose, Lascombe, Leoville, Mouton, Fleuret, Pichon-Longueville, Rouzau, Calon, Chateau-Giscourt, Chateau d'Issam, Chateau-Lagrange, Palmer, etc.

White Wines—Sauterne, Rabeaud, Latour-Blanche, Pupaguey, Bommer, Bayle, Rieussec, Barsac, Preignac.

Boric Acid. — A popular antiseptic extracted from *Borax* (which see).

Borecole or **Cow Cabbage.** — See *Cabbage.*

Bosan. — An oriental beverage obtained by boiling millet. It is very popular in Turkey.

Bosch Butter. — The conventional name originally given in Holland to what is now called *Margarine.*

Boschjesmans-thee. — A favourite drink among the bushmen, besides having a beneficial effect on coughs and asthma. Is derived from an amyridaceous shrub, *Methyscophyllum glaucum.*

Bosnian Plums.—(See also *Prunes* and *Plums.*)—The commercial name of the commoner kind of dried plums or prunes of Bosnia, Herzegovina, and Slavonia. Brecka, on the banks of the Save, is a great market for them, and about three parts of these plums are sold there. The superior quality is known as "Sultana," 70 to 85 plums to the ½ kilo. In the two first-named countries, plums form the basis of three native industries; cooked, they form without sugar a very rich jam or compote called "bestilj" or "lekivar"; pressed, fermented, and distilled, they supply "slivovitza," a drink which possesses a very fine perfume, and is greatly appreciated by the Slavs; dried, they become the *prune,* known throughout the whole world. In 1890 the export reached 17 million kilos., worth over £325,000; but it has since risen by leaps and bounds to about 40,000 tons annually. They are not, however, always of the same quality, sometimes being deficient in flesh and will not keep.

The plums are dried in ovens or 'pumiscas," and divided into six categories according to the size of the fruits. The first includes plums weighing 75 to the ½ kilo., then come 80's, 85's, 90's, 100's, while the sixth quality may be 110 or more to the ½ kilo.

The first quality is packed in rough boxes containing 5 to 10 kilos., and the other qualities in sacks or barrels. They mostly arrive in England packed in half-cases of 56lbs.

The fruit must be gathered only at a certain stage of ripeness.

They are sized by means of sieves. Improved French ovens have latterly been introduced for drying these plums, and they are now little inferior to best French plums.

Plums are the staple industry and export of Bosnia. The poorest peasant usually has a few plum trees by his hovel, and wealthy landowners never think of planting any other kind of tree by their country homes. The dried product is almost exclusively exported from the Possavina and the northern districts, the cost of transport being too heavy from the interior.

The export trade is mostly in the hands of German houses at Berlin, Ratisbon, Monaca, etc. Apply to Wm. Field & Co., Ltd., importers, 66 High Street, Hull.

Botanic Beer, Herb Ale, etc.—See *Non-Alcoholic Beers.*

Botany Bay Tea.—Prepared from the *Smilax glyciphylla.*

Botargo. —F. *Boutargue.* (Called in Provence "*Boriargues.*")

A sausage-paste or condiment made on the shores of the Mediterranean and the Black Sea from the roes of a species of grey mullet (*Mugil cephalus*), and white Russian sturgeons. The eggs are salted, crushed, reduced to a paste, and then dried in the sun or smoked. Sometimes spices and other ingredients are added. Its consumption is very general throughout the Mediterranean. Sold in small glass vases, kegs, etc. The best comes from Tunis and Alexandria, salted and dried like *Caviare.* This kind is made from the roes contained in the two oblong membranous pouches in the mullets common to the Lake Menzaleh.

It is used as a *hors d'œuvre,* eaten with bread and butter, olive oil, and lemon juice, and is principally intended as an incentive to thirst.

Bottled Ale and Stout. — See also *Ale*, *Porter*, etc.)—Grocers should be careful where they buy these. They are often offered wholesale at rates which cannot pay the honest bottler. It has been proved dirty bottles are often used, that the bottoms of ale casks are mixed off in stout, that Guinness' Stout and Bass's Ale are often mixed with cheap and inferior kinds. It is also said that "brewers' returns," cloudy or sour beers, thick and nasty cask bottoms, drainings from the bar, including froth, both of jugs and glasses, spent hops, soda water, slops, etc., often find their way into casks and ultimately fall into the hands of unscrupulous old-beer dealers and ale and porter bottlers.

Ale intended for bottling should be stored in the cellar some time before it is required to be bottled, otherwise there is no security for its being bright and in fine condition. The ale cannot become bright until it has entered into fermentation in the cask, and, therefore, when it is received, some time (more or less according to the state of the ale or the temperature of the cellar) must necessarily be allowed. If, however, the newly-brewed ale be effervescent it will usually become bright when it has stood from two to six or seven days, while ale that has been in the cask a considerable time does not become transparent so quickly and may, in some cases, require rest for a month after having been moved.

In cold weather beer can be drawn from the hogshead and bottled as soon as it is received, but in warm weather it foams, so that it may be necessary to insert a porous peg and to keep it several days in a cool cellar, if it has got warm in transportation, before tapping.

The bottles must be very thoroughly washed each time, before filling, with warm water and soda, then rinsed repeatedly with cold water until all the soda is washed out, to prevent the beer tasting of soda.

It is very important to use clean, dry bottles and good corks.

No ale is fit for bottling unless it is perfectly sound, brilliant and sparkling, but not in active effervescence. It should flow freely from the cask, without air being admitted to it, but not so as to cause frothiness in the bottles. The taps should reach nearly to the bottom of the bottle, so as to prevent the atmospheric air from mixing with the ale. The bottles should be corked immediately, and set upright on end in a cool cellar. With a board or two between each layer, they may be stacked up any reasonable height.

In summer they should be allowed to stand four weeks and in winter eight weeks, and the beer should then be in the pink of condition.

Every beer has some sediment. When the bottle stands up this sediment becomes attached to the bottom of the bottle, so that if the beer is poured out carefully all except the very last will be clear and free from turbidity.

Stout or Porter need only stand three or four days in the hogshead and about ten in bottle before using.

In filling the bottles the old way, a wooden spigot is used with a piece of rubber tubing attached, that reaches to the bottom of the bottle, so as to prevent foaming as far as possible. The bottle is immediately corked, so that the carbonic acid may not escape, and the cork driven down with a small wooden hammer. Some add artificial gas to the beer, but that is not wise. Others use screw-stoppered bottles, which may seem a saving, but the public, as a rule, prefer the old-fashioned cork. Great attention must be given to the cleanliness of the rubber tubing and the spigot, rinsing them with a soda solution before each time of using—and afterwards, too.

Great care must always be devoted to the corks, when corks are used. Those that have been bored or broken must never be used under any circumstances. Whether new or old corks are used, they must be soaked in warm soda solution and repeatedly washed with cold water until perfectly cold. It is far better, however, not to use corks that have already been used once.

When ale is bottled it should be kept in a cool cellar, say 55° to 60°F., til

required for use; but if it is found that the ale is not active enough, the removal to a warmer situation (which should not exceed 65°) will excite a more lively fermentation.

Porter, as sold in cask or bottle, is usually a blend of a new and old brew, and to judicious blending is due the characteristic flavour of several well-known brands.

By way of forcing condition in porter many bottlers use a small quantity of malt flour, brown sugar, fresh wort or "chipped" wort—*i.e.*, wort partially fermented—but, except when rapid consumption is certain, the use of these materials cannot be recommended, as they frequently induce acidity and ropiness. Fresh wort taken from the mash tun or refrigerator is, perhaps, the best forcing material; the others are all objectionable. Malt flour contains crude nitrogenous matter; brown sugar usually swarms with minute organisms, and chipped wort contains yeast and diseased ferments.

When the porter is bottled, some bottlers bin it away, and in winter keep up a forcing temperature by means of a fire or steam pipe till it gets into condition. This can hardly be said to be a good plan, as, when the porter is removed from the warm bins to the retailer's shop or bar, where the temperature frequently is very low, it is almost certain to lose its artificial condition, and go perfectly flat and undrinkable.

Porter needs more careful watching than ale, for as soon as it becomes ready for drinking it should be sold, and have a quick consumption, or it will become hard, and people will then say it is *sour*.

Such porter had then better be taken back and mixed off with the next bottling.

In conclusion, porter and ale to be bottled should be placed in a temperature of 50° to 60° for a number of days, until from quiet and temperature it is in a condition for bottling. Then, whether it be beer or porter, the bottling may or may not be done at a filling machine, at which four to eight bottles can be filled at a time. This method of putting the goods in condition by quiet and temperature and by filling at a machine secures full bottles, well charged with gas and without foam. There may, however, be a little more waste or spilt beer than if run straight into the bottles.

Bottled Fruits, etc.—These are much the same as "Canned Fruits," but are more tempting to the eye; the transparency of the polished glass enhancing the beauty of the respective fruits. The object, of course, is to keep the fruit as fresh as possible, and suitable for baking in pies, puddings, tarts, etc., during the winter and early spring, when fresh fruit is generally very scarce. Bottled fruits are also very useful on board vessels at sea, where fresh fruits are not procurable. It is consequently only in seaport towns or in winter and early spring that they sell well. Retailers should not overstock them, for, although they may keep in fair condition a long time when stored in cool dark cellars, they lose much in appearance by frequent removal and continued exposure to the light. At their best also they lack much of the flavour, and cannot compete in price with fresh gathered fruits. In preparing them, the fruit, especially the soft, is best when gathered, picked, and bottled the same day, and handled or crushed as little as possible. It should be gathered when dry, and should not be quite ripe. A sufficient quantity of spring water, to each gallon of which 4 ozs. sugar, or ½ oz. alum, or ¼ oz. of saccharin has been added, should first be boiled for a quarter of an hour, skimmed, and, when clear, turned out into a tub to cool. Few persons really know why the fruit must be quite dry when gathered if water is put to it in preserving, so we may explain that wet fruit detached from the plant *immediately* begins to decompose, and in six hours its flavour would be quite spoilt, whereas the water needed in cooking is at once heated, sterilised, and incorporated with the juice of the fruit. To resume, the bottles should be perfectly sound, clean, and dry, with

necks narrow or extra wide to suit the size of the fruits. Then pour a teacupful of cold water into each bottle to break the fall of the fruit, fill in the fruit—if gooseberries, top and tail them; if currants or cherries, pick off the stalks—and then fill the bottles up to the shoulder, knocking the bottle firmly from time to time on the table so as to shake the fruit well down, add more water to wash the fruit, then pour it off, and let them drain a short time upside down, and finally fill the bottle up with the liquor, leaving just enough room for the cork. Drive in good corks tightly with a "flogger," and tie each down firmly like a ginger-beer or champagne cork. Then stand the bottles upright in a suitable flat-bottomed bath, pan, or boiler, fill the vessel up to the lips of the bottles with cold water (but not so as to wet the corks), put a fire under and gradually bring them up by a thermometer to the heat—for green fruits, 180°F., and for red fruits, such as currants, cherries, raspberries, etc., 190° during a period of about two hours; then remove the fire, and leave the bottles in the water to cool gradually. The bottles may then be taken out of the water, and allowed to stand a few hours to dry. They are then finished, and may be gently stowed away on their sides in a dark cool cellar. When wanted for sale, they may be brought out and polished; the top of each bottle dipped in melted wax, or covered with tinfoil (like champagne bottles), labelled, and wrapped in paper.

Mr. Saddington might be named as the discoverer of the first method, and was awarded a premium by the Society of Arts in 1807.

A little alum being added to the water or syrup for the purpose of hardening the tender skin of the fruit.

A process not very unlike the above is that of M. Appert, who in 1810 obtained a reward of 12,000 francs offered by the French Government for the best method of preserving food. By Appert's improved method, the vessels are corked and wired throughout the whole process, the oxygen air in the vessel being destroyed by the heat.

Many of the larger manufacturers now employ steam sterilisers instead of the water baths, and sterilise the bottles before filling them.

Sometimes the fruits are preserved in glass jars with screw metal tops. These are filled in same way as bottles, but, instead of corking, the metal lids are screwed on loosely without the rubber, and when sufficiently boiled they are filled up with hot syrup, the necks are wiped, rubbers fitted on and screwed tightly down.

Another way is that commonly adopted by American housekeepers; it is simply to boil the fruit in sugared water in a procelain-lined stew-pan or kettle until it is sufficiently cooked, and to pour it boiling hot through a funnel into the jars, stirring it about with a spoon to let the air bubbles escape. The jars are then filled up with hot syrup, wiped with a moist towel, a rubber ring fixed, and then tightly screwed down. They are further tightened when cold. A little warm syrup is usually put into the jar before the hot fruit to temper the jar. One woman can thus preserve about 2 bushels of fruit per day.

Bottling and preserving fruits, jellies, pulps, juices, etc., is indeed a very simple matter now with the new and improved automatic bottles.

American fruit-houses preserve vast quantities of fruit by what is known as the "California Cold Process." The fresh fruit is just put into the vessels intended for it, and a solution of the compound extract of salyx is poured over it, and it will keep its natural colour and taste for years. A single person can thus preserve large quantities in a very short time, say a bushel in ten minutes.

Bouillabaise (*boo-yah-bess*).—A fish soup of Marseillaise origin, consisting of salt-water fish, onions, carrots, shalots, and oil; and seasoned with lemon-juice, saffron, cloves, thyme, parsley, pimento, pepper, cayenne, and salt.

Very popular about Marseilles, the southern French being, like Spaniards,

very fond of oil, shalots, and garlic with their food.

Readers may remember this medley has been very lovingly described by Thackeray.

Bouilli. — A French name for beef or other meat that has been boiled, especially the former, and in which are mixed vegetables, herbs, and other seasoning.

Bouillie Bordelaise. — A French liquid for sprinkling over vines and similar plants to prevent mildew.

It consists of 3lbs. of sulphate of copper (blue-stone) and 1lb. of slaked lime, boiled in 22 gallons of water; and is so named because it was first used in the Bordeaux vineyards. Another similar mixture is the "*Bouillie Bourguignonne*," used in Burgundy. Opinions vary as to whether these liquids render the wines somewhat poisonous, hence the grapes are only sprinkled while very young.

Bouillon. —A French name for the stock or liquor in which meat, bones, vegetables, herbs, spices, etc., have been boiled or simmered, and from which basis various soups or broths may be afterwards prepared. Clear stock is called *Consommé*.

Bouquet Garni.—A bunch of sweet nerbs. Thyme, marjoram, parsley, chives, and bay-leaf are the most usual combination.

Bourbon Coffee. — A highly esteemed variety of coffee from the French island of that name in the Indian Ocean.

The berries are of a pale, almost whitish, colour.

Bourbon and Martinique coffees go exclusively to France, but are often substituted by what is known in the trade as Bourbon or Mocha-seed, Santos, Jamaica, and other fine mild sorts.

Bourbon Tea.—See *Faham Tea.*

Bourguinote. —A sort of stew with truffles, generally made from game.

Bouza. — A fermented drink, prepared in Abyssinia and Arabia from teff, the seeds of *Poa Abyssinica*, and from the seeds of *sorghums* or *millets*.

Bovril. — Bovril was invented to realise Baron Liebig's desire for a meat food that would contain not only the stimulating properties of flesh—as all Meat Extracts and beef-teas do—but also the nourishing properties of flesh, which Meat Extracts and beef-teas do not. It is manifest that if a food can be presented with this desirable combination of the extractive and nutritive qualities of meat, it would be preferable to all others. Bovril, Limited, explain that this has been accomplished by first taking the extractive principles by the Liebig process (which is akin to home-made beef-tea) and then adding albumen and fibrin, procured from the flesh of *other beeves* roasted and finely ground to powder; the combination is Bovril. Lord Playfair and Sir Edward Frankland confirmed the scientific value of the invention, and Professor William R. Smith, President of the Royal Institute of Public Health and Medical Officer to the London School Board, endorses the soundness of the therapeutic value of the product.

Braden's Farinaceous Food.—Seems to be composed chiefly of wheat flour carefully baked.

Braise. — A French name for small (braised) coal. *Braised Beef* is an American preparation of pieces of meat, cooked, spiced, and put up in tins, often with rice, gumbo, etc.

Brambles or **Blackberries.** — F. *Mures de Ronce;* G. *Brombeeren;* W. *Mieren.*

The fruit of a very common, but one of the most variable, of British wild plants (*Rubus fruticosus*). There are upwards of twenty sub-species, all nearly related to the raspberry. The parsley-leafed variety, *R. laciniatus*, is perhaps the most useful; but the Warwickshire cultivated type, of purplish-black and shining colour, is a rich and well-flavoured fruit. The other common varieties are the red fruited (*R. f. suberectus*) and the hazel-leafed (*R. f. corylifolius*). The blue brambles

(*R. f. coesius*) are best known as *Dewberries*.

The bramble flowers and fruits late in summer, and the berries, antiscorbutic and very wholesome, although rather insipid, make a fairly nice jam, of delicate flavour, also a pleasant wine. It is surprising they are not more cultivated, for those that reach the market fetch as much as raspberries. Perhaps they are not tart enough to please the modern taste for acid fruits, and if more were marketed the price might decline. Sugar is cheap, and the demand seems to run upon sour fruits and plenty of sugar rather than the sweeter fruits with less sugar.

Bran.—F. *Son;* G. *Kleie;* Port. *Farelo;* Sp. *Salvados;* W. *Rhuchion.*

Bran contains a large amount of nitrogenous matter, and flour loses a very valuable portion of its nutritive power by separation of the bran. Uses:—(1) A handful of bran mixed with a pail of warm water makes an excellent foot-bath. (2) Infused in hot water and sweetened it forms bran-tea, a gentle laxative and very good for coughs and hoarseness. (3) Bran poultices. (4) Feed for horses, either mixed dry with their corn or made into bran mash. A bran mash made by mixing together half a pail of bran and half a pail of boiling water, and stirring in about ¼ oz. of ground saltpetre, forms an invaluable weekly corrective for a horse. It should be given lukewarm on a Saturday night, and half a pint of linseed boiled along with the water is a great improvement.

Brandreth's Pills.—A mild kind of purging pills, said, on the authority of two American druggists and one dealer, to consist of gamboge, podophyllin, the inspissated juice of pokeberries, saffron, turmeric, cloves, and peppermint oil.

Brandy.—Du. *Brandewyn;* F. *Eau de Vie;* Ger. *Brantwein;* It. *Aquazente;* Rus. *Wino;* Sp. *Aguardiente;* W. *Brandi.* (See also *Cognac* and *British Brandy.*)

The name brandy is derived from the old German word *Brantwein*, meaning burnt (distilled) wine. About 200 years ago it was also known as *Nantz*, from the town Nantes, the capital of the Loire Inferieure, whence it came; but this name was changed afterwards to "Cognac," where a large amount of brandy is still made.

This spirituous and inflammable liquor is indeed nearly all prepared in France, the chief distilleries being at Cognac, Bordeaux, Rochelle, Orleans, Nantes, and Languedoc. It is usually about half pure alcohol and half water. Cognac brandy is considered the best, and when genuine is understood to be obtained by the distillation of wine. Another variety, technically known as *Eau de Vie de Marc* or *Eau de Vie d'Aisne*, is distilled from the lees, skins, and refuse of grapes after wine-making, but it is somewhat coarse and unpleasant in flavour on account of an acrid oil in the grape skins.

In France brandy is also being made from apples. There was an enormous crop of apples in Normandy in 1895, and it was thought that the making of brandy might prove commercially possible. The yield was not great (five per cent.), but the quality, it is said, left nothing to be desired.

When fresh, distilled brandy is colourless, and will keep so in glass bottles, but may afterwards get colour from the casks. The colour is nowadays principally derived from the addition of burnt sugar or saunders-wood; but brown brandy is generally very inferior.

Great Britain seems to secure nearly all the best French brandy just as she has the choice of the finest French wines. The two principal and several of the subordinate firms at Cognac are of British origin, and, indeed, so predominant is the English element there that Frenchmen dub it the little English town.

A hundred years ago brandy was the favourite drink with the aristocracy, as was gin with the common people; but pale brandy was not then so much esteemed as brown. As a rule, the large firms in France do not themselves distil

the brandy they sell, but leave that operation to the small farmers round about, and then blend the various products, because to produce the quantity those firms sell, enormous distilling space would be necessary. The crude, white spirit from the farmer on arriving at the brandy factory is tasted, measured, and put into new oak casks, hooped round with chestnut wood, branded with date, quality, and place of growth, and stored till required for blending with other growths, filtered and kept for several years to mellow. The pleasant aroma is due to the presence of ethyls or developments of fusel oil, found in the marc or husk of the grape.

Beet-root spirit, produced from the refuse syrup in making beet sugar, is also often used extensively in brandy making; but a very large proportion of the brandy sold in this country is simply raw grain spirit flavoured and coloured. The spirit is exported from England and Germany into France, where it is re-distilled and converted into so-called French brandy.

Peach Brandy is a popular spirit in the United States obtained from the fermented fruit of the peach.

A great deal of the spurious brandy is made at La Rochelle, and, no doubt, the English dealers are as much to blame as the French merchants. The former know well enough that it takes 8 gallons of wine to make one of genuine brandy, and that the first cost of this latter is, therefore, about 7/-, and that it is not fit to use until kept for some years, so that the cost of storing, caring, and the loss of a certain part of it, interest on capital, and the profits of the dealer may fairly carry the price to 12/- per gallon. In buying brandy at 2/6 to 4/- a gallon, the British merchant must, therefore, know quite well it is not a genuine article, and, doubtless, much of it is made with "ethylic alcohol."

In Northern France genuine brandy is professedly the natural product of wine, cider, or other fruit juices, but over three-fourths of that is manufactured in the Northern departments from raw grain spirit or "*alcool d'industrie*," obtained from maize, rice, and other farinaceous substances, as well as from molasses and beetroot. This sort of spirit also passes as "Clear spirit," "Berlin spirit," etc. An appearance of age is commonly given to brandy and other alcohols by spraying the spirit into an atmosphere of oxygen. By a process of M. Villons, the spirit is heated to 70°C., and oxygen is then pumped in at a pressure of 5 to 6 atmospheres, care being taken to maintain the pressure for 12 hours, the liquid being agitated from time to time. By repeating the process two or three times, all traces of fusel oil are driven off and at a trifling cost.

For reasons above shown, French brandy is only used by those ignorant of recent practices, and is no longer recommended by the doctors. The valuable property in brandy is the alcoholic ether, which is developed by age only, and is entirely absent in the modern imitations.

Spanish brandy is now considered much superior to French, owing to the fact that wine in Spain is very cheap, and, therefore, more generally used for brandy-making.

The strength of brandy as sold varies from proof to 30 or 40 under proof, but by an Act of Parliament, 42 and 43 Victoria, c. 30, s. 6, all brandy below 25 under proof is considered adulterated, unless a special declaration be made as to its actual strength.

The best way to reduce brandy is to use distilled water; neither boiled nor filtered are so good, and well water turns it cloudy. If imported in casks, the casks must not be smaller than 20 gallons, and in ships of not less than 50 tons, or forfeited. The duty is 10/4 per gallon, and the annual imports average about 3,000,000 gallons.

Brandy or Cognac Bitters.—A compound bitter liquor, usually made by steeping bitter vegetables in weak brandy for a week or two, aromatic flavourings and sugar being also added, as with other bitters. Brandy bitters are also commonly prepared from a concentrated essence made and sold by the essence distillers at 6/- or 7/- per lb.

Some sorts known as *Wine Bitters* are made out of cheap white wines (cape or raisin).

Brandy-Snaps. — Thin wafer-like gingerbread biscuits, slightly flavoured with brandy, and generally curled in baking. They may be made thus:— 8lbs. of flour with 1lb. of lard or butter is formed into a strong paste; 6 ozs. of ground ginger, 6lbs. sugar, and 2lbs. of treacle are then added, also a little salt and either a little brandy or a few drops of essence of lemon to give flavour. The whole is afterwards well kneaded together on a well-floured board, rolled out very thin, and the snaps are then cut to shape with a tin paste cutter and baked in a slow oven. When about half baked and while pliable the curled shape is given by rolling them round pieces of wood and then baking them till crisp.

Brank.— See *Buckwheat*.

Branvin. —A species of gin largely consumed in Scandinavia, where its manufacture is a Government monopoly.

Brass Polish. — (See also *Metal Polishes*.)—Many of the brass polishes appear to be a mixture of tripoli and linseed oil—20 grains of the former to the ounce—a little rouge being added to bring up the colour. In the absence of tripoli, rottenstone and rouge are often used; but the regulation form seems to be 1 oz. oxalic acid, ½lb. soft soap, ½lb. sweet oil, 1 oz. oil of turpentine, 4½lbs. rottenstone, and 16 ozs. boiling water.

Dissolve the acid in the water, add the rottenstone, mix, and incorporate the other ingredients.

For materials apply to C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Brawn, Collared Brawn, Mock Brawn.—F. *Tête de sanglier*; G. *Schweinkopf*: Port. *Cabeza de Cachaço*; Sp. *Cabeza de Jabali*; W. *Brôn*.

For centuries brawn has been an English national dish for Christmas-tide. They are of three classes (1) in moulds, (2) in skins, and (3) the old-fashioned close packed brawn.

It is professedly made from pig's or "wild boar's" head; but is now generally made from the head and belly piece, feet, and rind, of either the pig or the ox. The leg with ham rinds, or the neck, crop, chuck, with the spare ribs, gristle bones, and feet are all used, whilst, on a pinch, cows' heels, lambs' tongues have to form *mock brawns* in lieu of boar's head. Lean beef is sometimes added, and in low-priced qualities objectionable offal. These ingredients, salted or pickled, are boiled in water till quite tender, the bones are then removed and the meat chopped in a machine and well seasoned while hot with a mixture of salt, ground pepper, allspice, ginger, cloves, and a little cayenne. It is then left under pressure till firmly set. In summer a little gelatine is usually dissolved and well stirred in to help the setting—say ½ oz. gelatine for each pound of meat.

Most manufacturers add a little red colouring (vegetable) and borax or other antiseptic to improve the appearance, and keep it longer.

A considerable quantity of manufactured brawn has lately been coming from the United States, but it does not seem right that this should either come labelled or be afterwards labelled in large letters "English Brawn."

Special Firms.—Hillier's Bacon Curing Co., Ltd., Newmarket, near Stroud; Tebbutt & Co., The Works, Melton Mowbray.

Brazil Nuts or "Shoe" Nuts.— Du. *Brezille* or *Foelie Nooten*; F. *Noix Péchurins*; G. *Pechwunnüsse*; It. *Fava Bucari*; Port. *Pucharins*; Sp. *Becuiba*. (Also known as *Castanhas*.)

The fruit of the *Juvia Bertholletia excelsa*, a kind of myrtle tree, of enormous size, growing about 100 feet high in the vast forests of Guiana and Venezuela, as well as in the north-west of Brazil, and particularly on the banks of the Orinoco river. These triangular-shaped nuts, so familiar in our shops, grow in a thick, hard, round, woody outer shell or seed-case, 4 to 6 inches in diameter, not much unlike the milky cokernut.

In this outer shell, seed, or pericarp are four or six divisions, with 20 to 30 of the well-known three-cornered nuts, packed closely together, each of these latter also having a hard brown shell of its own.

A striking instance of the fierce and fatal competition which goes on even amongst plants is found in the case of these small nuts, for although the whole of them germinate at one time, it is only the most vigorous one which gets first through a small hole at the top of the large outer shell to the open air, and thereupon it fills up the hole and strangles the rest and feeds upon them.

The almond-shaped inner kernel of the nut, when peeled of its dark skin, is white, and if fresh is sweetish and possesses a very agreeable flavour, very like that of the hazel nut.

About 300 years ago they went by the name of *Peru Almonds*.

The kernels contain about 56 per cent. of oil, and, consequently, will not keep very long, but turn rancid, and are then almost useless, although from the close-fitting shell they possess they will keep better and longer than walnuts.

The oil extracted from Brazil nuts is of a bland character and is much used by watchmakers, also sometimes for burning in lamps.

To procure the nuts from the lofty trees, the Indians generally commence by pelting the monkeys with stones, and the monkeys reply by hurling down at their heads the large hard cases full of these three-sided nuts. The cases are usually broken open with an axe or hammer, and the nuts then taken out. It is very dangerous to enter the forests when these nuts are ripe without protecting the head and shoulders with a wooden covering, the hard wooden seed-cases being heavy enough in falling to break a man's skull. In the great Amazon valley the gathering of these nuts is quite a business, the total exportation being about eight million hectolitres yearly. The larger nuts are from the Manaos region and the smaller from Para. A bag of Brazil nuts (at barrel measure) weighs about 1½ cwt. New crop usually begins to arrive early in March. From Para and French Guiana they are mostly exported in baskets or "alquieres," of 60 to 80lbs. each.

Brazilian Arrowroot is a commercial name for the starchy powder of the ground mandioc root after its separation from the fibre.

Brazilian Cocoa. — See *Guarana*.

Brazilian Coffees. — The annual exports of coffee from Brazil exceed 400,000 tons in weight and £20,000,000 in value. It is estimated that about three-fifths of the coffee used in the world is raised in that country, and the bulk of what reaches England certainly comes from there; Rio, Venezuela, and New Grenada are the chief coffee-growing districts.

Some Brazilian coffees have, however, a peculiar almost unclean flavour, and are used for mixing with other kinds.

The newer variety called *Maragogipe*, from the province of that name, is coming much into favour with planters. The flavour is inferior, but the berries are larger than ordinary varieties—not, however, so large as Liberian—but being a good and early cropper, it serves to cheapen *genuine* coffees.

In Brazil the plants are raised in seed-beds and transplanted at one year old in the plantation in the *quincunx* order, with about four hundred plants to the acre. Holes are dug for the plants, ploughing being impracticable owing to the stumps and roots left in the ground to decay; the hoe and mattock do the subsequent work, which is to keep down the weeds.

In four years the plants begin to produce, the trees grow about ten feet high with a diameter of about five feet, and keep in bearing for forty years with careful pruning. There are three annual bloomings and crops.

"*Maragogipe*" plants, however, grow much more rapidly, and yield fruit in the third year.

The coffee is gathered in baskets and carried to yards of hard beaten clay, where it is dried in the sun or in drying pans by artificial heat. The outer shell

is separated from the beans by machinery, and the thin inner husk by still other machinery, and the coffee is then ready for market.

Its quality is much improved with age; the aroma increasing as desiccation goes on. The best Brazilian coffee is, when dried, of a pale yellow; while the new immature beans are green.

The different varieties possess different qualities, though from the same crop are obtained so-called Mocha, Java, and others that figure in our markets. They are simply different sizes of beans separated by machinery.

For those who do not know that a green colour is a sign of immaturity the light and spotted beans are dyed to a beautiful green, which is easily washed off, as indeed it should be before using. There is very little true Mocha imported; but the tubular shaped berries found growing singly in the pod, and called "virgin," "male," or *pea-berry*, are found mingled with all crops and are easily separated from the larger and flatter beans, growing two in a pod, closely resemble, and are, in fact, often sold as Mocha. True Mocha has about 510 beans to the decalitre.

Brazilian Tea.—Obtained in Brazil from the plant *Stachytarpheta jamaicensis*, a kind of Verbena.

Bread.—Da. and Sw. *Bröd;* Du. *Brood;* F. *Pain;* Ger. *Brod;* Port. *Pao;* Sp. *Pan;* Sax. *Breod;* W. *Bara.*

The conventional names and forms of bread are very numerous. There are the 2lb. and 4lb., 8lb. and 12lb. loaves, square and round, the round being called "cottage" in some districts. Then there are "pan" or tin loaves, "sandwich," square and round, from 1½ to 14lbs. each; French and Vienna twists and crescent-shaped loaves, Coburg loaves, cobs, and cottages; the *heart loaves* of Edinburgh called "French"; Melvins, crusty and crumply loaves, tin cakes, Hungarian loaves, Cauliflowers, etc.

French Bread, Germ Bread, Milk Bread, and Whole Meal Bread are mentioned elsewhere under their respective headings.

The ordinary baker's way of making bread is first to prepare the "ferment," which is usually done from eleven to twelve o'clock in the day. It takes about ten minutes to do it. Potatoes—in the proportion of 1½lbs. to the bushel of flour, or 9lbs. to the sack of 280lbs.—are first boiled and then mashed in a tub. Two quarts of hot water are added, and the mash is well stirred. When the mixture of water and of potatoes is complete, cold water is added, until the whole is cooled down to 80°F. After this, yeast—1 quart of brewer's yeast is the usual quantity—is mixed up with the mash in the tub, and about 2lbs. of flour are added to "feed the yeast," and the whole covered over and allowed to stand from six to seven hours. If what is called "patent yeast" is used, the water that is added to the mash is left at from 90° to 100°F. instead of 80°. The mixture is called *the ferment*. It ferments to a "head," and then falls once, and sometimes twice. It is ready for use when the fermentation has ceased. At about five or six in the evening the "ferment" is ready to be mixed with one-fourth part of the flour which is to be made into the bread. This is commonly called "setting the sponge." The admixture is usually made with the arms of the workman, water being added in sufficient quantity, from seven to eight gallons to make "the sponge." The "sponge" remains from five or six in the evening until about midnight, in order to undergo the process of fermentation. It rises the first time in about four hours, then it falls. It rises a second time in about three-quarters of an hour to an hour afterwards. So soon as the sponge is ready, the remaining three-fourths of the flour which is to be made into bread is added, and the workman proceeds to mix the added flour with the sponge, with more water, and with about 3lbs. of common salt. The water now added is about 8 gallons, the whole quantity of water required for every stage of the process of making bread from the finest flour

being about 16 gallons to the sack of 280lbs.

Making the dough, or kneading, now begins, and this is the hardest work which the baker has to do. It takes a man about three-quarters of an hour to make a sack of flour into dough. After the dough is made it stands, according to the kind of yeast used, or whether the weather be hot or cold, from half an hour to 2 hours; shorter if the yeast used be of best quality. and the weather be warm, and *vice versâ*. During this interval, the baker takes some refreshment and has a rest. About two in the morning he proceeds to weigh off the pieces of dough, which are put aside as they are weighed. When all the dough is weighed off, the process of moulding the loaves commences. A 280lb. sack of flour may yield 90 to 95 loaves of 4lbs. each, and they are put into the oven as fast as they are moulded. The boards on which the bread is weighed and moulded are scraped and brushed every time they are used, and many masters have them washed once a week; but the moisture left from washing has a tendency, in the opinion of some masters, to make the bread sour.

From two to three in the morning until five the bread remains in the oven, where it is exposed to a temperature of 400°. There it passes through the process of complete cooking, with the formation of crust. The bread is withdrawn, and when cool enough is ready for sale.

Every person selling household bread (not "Fancy" or "French" bread) is bound to sell by *weight*, and on being asked for a two-penny or other priced loaf the seller is finable unless he weighs it; but although it is a custom to sell it in 2lb., 4lb., or 8lb. loaves, there is no legal compulsion to adopt these weights. To obtain loaves of 4lbs., a baker usually weighs 4lbs. 6 ozs. of dough. The weight of bread obtainable from a sack of flour depends chiefly on the water added and the amount of gluten in the flour, the difference arising from the large amount of moisture retained in the latter, hence light, spongy, fermented bread is cheapest for the consumer. The loaves nearest the fire lose most in weight, and tin loaves more than *oven bottoms*. Mrs. Rundell says 14lbs. of American flour will make 21½lbs. of bread, whereas the best English produces only 18½lbs. This is said to arise from the superior quality of American wheat, and also from its being kiln-dried before grinding.

The degree of hydration of bread also depends much on the shape of the loaves, and for equal weights a long one is preferable to one of a round form. Ever since the introduction of rollers for grinding wheat into flour, the want of moisture in bread has been a source of complaint, and this is explained as follows: It is said that the baking quality of flour depends chiefly on the oil contained in the germs of the grain; that in roller-ground flour these germs, and along with them the oily matter, are separated from the flour, and that such flour, although lighter in colour, is dry and husky, while in stone-ground flour they are retained. Hence the better taste and softness of bread made of the latter, which, nevertheless, has one defect, the oil is very oxidisable, causing the flour to turn sour in a shorter time. Roller flour is undoubtedly whiter than stone-milled flour, but the latter is certainly the best. Unfortunately, the public are led by colour, and of course the customer is the master.

Recent experiments, however, have proved that a little almond oil mixed with the dough made of roller flour, one part by weight of oil to 500 of flour, produces a bread not only just as savoury and elastic as the stone-flour bread, but even superior to it. On the other hand, bread made of the same kind of flour without the almond oil has proved tasteless and died out very soon.

The fermentation of bread seems to consist in a normal alcoholic fermentation of the sugar which already exists in the flour.

The yeast plays a double part in the process—it produces a disengagement of gas, which causes the dough to swell, and it prevents the bacteria, which are

parasitic on the starch grains, from developing and thus making the dough sour and dissolving the gluten.

On adding the yeast a fermentation ensues, and there is a continual evolution of gas which accumulates in the bakehouse, the starch changes into sugar, and the sugar is decomposed into carbon dioxide, and alcohol.

The gluten prevents or retards the escape of the carbon dioxide, and the tension of the warm gas expands the little cells which give bread its spongy appearance, but the alcohol escapes, and must affect the bakers.

Sour bread is generally caused by poor yeast, especially during the warm months. The acidity of the yeast is imparted to the bread, and too much acidity produces sour bread. All yeast should be carefully tested before use. Unsound, or sprouted wheat will also cause sour and runny bread. If flour is left in a damp place or package it will become tainted and make sour bread.

If both flour and yeast are sound and good and the bread made therefrom is sour, it is due to leaving the dough too long over some stage of working, or, as it is generally called, overfermentation. It is a fact that the alcoholic fermentation of dough, by which normal aeration is caused, is followed by fermentation which results in sourness. Again, changes in temperature or the degree of stiffness of the dough may accelerate or retard fermentation as a whole, but they do not alter its character and general course. Thus we can see that there are many things aside from poor flour that may cause poor baking results.

Good, strong flour, sound yeast and a good baker will, as a rule, make good bread, but under the head of good baker there are many points to be considered: First, careful attention to the temperature of the water, oven, and the flour itself. Second, proper kneading of the dough—do not knead it too stiff. Third, slack dough will ferment quicker than stiff dough, therefore, it must be handled quicker. All of this comes to the baker and housewife by experience. More bread is spoiled by poor and careless bakers than by poor flour.

Spring wheat flour will make more bread to the barrel than winter wheat flour, as a rule, because of its having 3 to 5 per cent. more gluten, consequently it has more expansion, and as it is milled more granular it will absorb more water. The most palatable and satisfactory bread-making flour is that which gives the best flavour, retains moisture the longest, and is free from branny or germy particles and at the same time has a good colour.

Winter wheat patent will fill more of these requirements than spring wheat. Of course, the professional baker prefers the strong flour—the one having the greatest water absorbing quality—as his profits increase accordingly. But for all-round family use and general satisfaction, especially as to colour and moisture of loaf, the winter wheat flours have the preference and generally sell for more money.

A blended flour of one-third spring and two-thirds winter is quite popular and a good one to use. It is almost universally used by large bakers. It gives both colour and strength, and retains the other qualities better than if either flour was used alone.

Alum.—Opinions of both chemists and doctors differ as to whether the moderate use of alum, say 5 to 10 grains to 1lb. of bread, is really injurious, but there is no doubt the bread produced is both whiter and finer if alum be present; it is said that even second quality flour with alum will make nicer-looking bread than *first* flour without it. Both millers and bakers frequently add it to bad or slightly damaged flour.

The whitening effect seems to be produced by the alum preventing the *cerealin* re-acting on the starch present in the flour from generating sugar and dextrine, which would cause a darkening in colour.

But there is that other *weighty* reason for its use, it enables the flour to absorb a larger quantity of *water*, and so produces a greater weight of bread from a given weight of flour.

Alum in bread is easily detected. The materials necessary are a solution or tincture of logwood, to which a sufficient quantity of carbonate of ammonia has been added to render it strongly alkaline, and some slips of gelatine; a slice of the bread is then crumbled into a glass and covered with pure water, a slip of the gelatine is added, and the whole allowed to stand over night. In the morning the swollen and softened slip of gelatine is removed and stained with the ammoniacal logwood; if no alum is present the gelatine will be of a dark pink or red colour, but if the bread contain alum the gelatine will be coloured various shades of blue, from a barely perceptible purple up to quite a decided blue, according to the quantity of alum present.

A rough and ready test is to dip a slice of the bread into a watery solution of logwood, when the claret colour may be produced at once; but perhaps the most convenient way of applying the logwood test is to macerate 4½ ozs. of logwood chips in 8 ozs. of spirit for 24 hours, and filter. A few drops of this added to moistened bread or bread-crumb or flour in a little water will readily show up a lavender or blue colour if alum be present.

In searching for alum, the crust and the crumb should be analysed separately; for many bakers use for the latter a flour technically called "cones," which is strongly alumed, and prepared from a fine species of wheat grown in the south of Europe, mixed with rice. This mixture is used for dusting the kneading trough and kneading boards, in fact, for facing the sponge before baking it.

Lime, sulphate of zinc, and copper sulphate have also been used, the latter, however, more generally on the Continent. Lime, however, presents a marked advantage, that of preventing the *souring* of bread by retarding the fermentation of the starch into lactic acid. Potatoes and damaged rice are often used by some bakers, and there are cases where gypsum, chalk, and pipe-clay have been used. The mixture of potatoes and boiled rice is added to enable the flour to take up more water, so that five or six additional loaves may be sometimes made from a sack of flour. The pipe-clay or Paris white being insoluble, will be noticed to settle at the bottom of a vessel filled with water and a little of the crumbled bread or flour.

Rice, potatoes, pea-flour, etc., are best detected under the microscope by the form of the granules.

The causes of holes in bread are said to arise from (1) the excessive use of low-priced Indian wheat in producing cheap flours; (2) weak yeast; (3) insufficient kneading of the dough; (4) bad moulding.

The black or purple mark often seen between the head and bottom of a loaf is due to too much fermentation, and generally betrays *sour bread;* while the hard streak extending from side to side is often caused either by a knock or fall such as to cause a concussion between the head and bottom, especially before the batch is sufficiently baked; or it may also occur by reason of the head before baking being removed and replaced in such a manner as to leave a skin on the inside.

Fresh and Stale Bread.—A 4lb. loaf loses about 1¼ oz. in 24 hours, about 5 oz. in 48 hours, and about 7 oz. in 60 hours, but this loss varies a little with the temperature, draughts of air, etc.

For Best White Bread (according to Mr. Wells).—Take 8lbs. of flour (say Hungarian best brand), 3 quarts of milk and water in equal proportions, 3½ ozs. compressed yeast, and 1½ ozs. salt. Mix the water (warm) with the milk so that the final temperature may be about 85°F., dissolve the yeast in this, and with a little of the flour make a flour ferment which should stand for about one hour; then add the remainder of the flour and the salt and thoroughly knead all together. Let this lie for 2½ hours, then work off, prove and bake. If a jet of steam can be introduced into the oven the bread will get nicely glazed. During many years the women folk of England have preferred the whitest flour, which taste the roller millers

hastened to supply, but nature is stronger than fashion, and the human stomach has craved for something to fill the gap caused by the removal of all the colouring matter, hence we see "*Germ*," "*Hovis*," "*Vagos*," and other specially prepared compounds, wholemeals, etc. To bring up children exclusively on fine white wheaten bread is both cruel and foolish, and is greatly the cause of the enfeebled frames of a large proportion of our towns' populations. Indeed, the numerous patent meals, breads, etc., adapted for weak stomachs, also appear to suggest that many persons are finding out that ordinary white bread is by no means the "staff of life" it has long been supposed to be.

When bread was formerly rated according to the price of wheat, the decree setting forth the price was called *Assize*, hence the name "Court of Assize."

As already shown, the law requires that all bread, except "fancy bread," should be sold by weight. The bread must be weighed after being baked, and in the presence of the purchaser if required. The Act of Parliament also provides that all bakers and sellers of bread, who send bread out in carts, must carry with them constantly in such carts correct and proper weights and scales, and must weigh such bread when requested in the presence of the purchaser, or in default pay a fine not exceeding £5.

"Fancy bread" must differ from ordinary bread in make-up or in being marked.

The weekly consumption of bread in pounds per inhabitant is in Germany, 11·2; France, 9·7; Russia, 9·4; United States, 7·5; Great Britain, 6·3; Austria, 6·0; general average, 8·5.

Bread and Flour Weights.—A peck loaf weighs 17lbs. 6½ ozs.; a half peck loaf, 8lbs. 11 ozs.; a quartern loaf, 4lbs. 5½ ozs.; a peck, or stone of flour, 14lbs.; a bushel of flour, 56lbs. 6 oz. a pack of flour, 240lbs.; a sack, 280lbs.; a barrel of American, 196lbs. A rise or fall of 4/- per sack of flour means a difference of ½d. per 4lb. loaf.

Wm. Gardner & Sons, engineers, Gloucester, make machines specially suitable for treating flour and meal. Catalogues free.

Bread-Fruit.—The fruit of the *Artocarpus incisa*, or bread-fruit tree, a native of the South Sea Islands, but now flourishing in several of the West India Islands. It is not unlike a large apple tree, growing 40 to 50 feet high, but with a soft herbaceous stem, and often rises half that height without a branch. Yields fruit in three years from planting the seed, and bears dark green glossy leaves 12 or 18 inches long, large, rough and lobed, and the spherical shaped fruit hang on the boughs not unlike large pine-apples, sometimes in clusters of two or three. They are rough-skinned, knotty, and about the size of a large turnip, say 5 to 8 inches in diameter, and some 3 or 4lbs. in weight. The bread-fruit is at first green; when half-ripe, brown, and at this stage it is best appreciated by experts; when fully ripe it is yellow and juicy, but with a decayed or rotten taste. It is usually gathered green in October or November, when its pulp is white and mealy, with little taste, and not unlike the crumb of a wheaten loaf. Though insipid, it is highly nutritious, and in Tahiti and Samoa forms a most important food to the natives, bearing two or three crops a year, and, in fact, during the eight or nine months while bread-fruit is in season they use no other bread.

The bread-fruit of Otaheite is the most valuable of this species. It ripens during eight months of the year, and the prepared fruit, slightly dried, supports the natives during the remainder. The fruit is baked entire in hot embers, and the inside is scooped out.

Bread-fruit is cooked in various ways; roasted in thick slices it tastes like frosted potato; sometimes it is boiled or fried in palm oil. When baked it will keep for some weeks, but uncooked not more than twenty-four hours. The natives of several of the Pacific Islands use the wood for boat-building, and a sort of cloth is made of the inner bark;

the flowers serve as tinder, the leaves for wrapping up food and as towels, and the juice as cement for filling up cracks in water vessels and as bird-lime. Its fruitfulness is said to exceed even the generous plantain or banana. It dispenses entirely with the labour of the agriculturist, the miller, and the baker. There is no care for seed time or harvest, no thrashing, no grinding, no kneading —in fact, the islanders have their bread as it were ready prepared, and have only to place it on the fire as they need it. In fact, a Polynesian owning twenty ordinary bread-fruit trees is independent for life, unless his enemy wantonly destroys them. Other species of this tree yield the *Paw-paw* and the *Custard Apple*.

Breadstuffs.—An American term for the various kinds of grain, meal, or flour from which bread is made.

This in most countries is wheat or rye, but in other countries maize, millet, and other cereals are used. There are some civilised nations a large proportion of whose peasantry eat little or no bread. Baked loaves of bread are unknown in many parts of South Austria and Italy and throughout the agricultural districts of Roumania. In the villages of the Oberstiermark, not very many miles from Vienna, bread is never seen, the staple food of the people being *Sterz*, a kind of porridge made from ground beech-nuts, which is taken at breakfast with fresh or curdled milk, at dinner with broth or fried lard, and with milk again for supper. This *sterz* is also known as *heiden*, and takes the place of bread, not only in the Stiermark, but in Carynthia and in many parts of the Tyrol. *Pumpernickel* is the chief food of the Westphalian peasantry; and *Mealies* are the staff of life in Africa. In the north of Italy the peasantry live chiefly on polenta, a porridge made of boiled maize. The polenta, however, is not allowed to granulate like Scotch porridge, or like the Austrian sterz, but is boiled into a solid pudding, which is cut up and portioned out with a string. It is eaten cold as often as it is hot, and is in every sense the Italian peasant's daily bread. The modern Roumanians are held by many scholars to be descended from a Roman colony, in other words to be the cousins of the Italians; and, curiously enough, a variation of the polenta, called *mamaliga*, is the national dish of Roumania. Mamaliga is like polenta in that it is made of boiled maize, but it is unlike the latter in one important respect, as the grains are not allowed to settle into a solid mass, but are kept distinct, after the fashion of oatmeal porridge.

Breakfast Cereals comprise granular foods partially cooked or roasted:—*Cooked Crushed Oats*, *Rolled Oats*, *Cooked White Wheat*, *Cerealine Flakes*, *Avena Flakes* or *Prepared Oats*, *Hominy*, *Sowans*, *Succan*, *Groats*, etc. (See also *Prepared Foods*.)

Cereals are incomparably the most important of all the plants available for human food, and what is very remarkable is the great weight of the seed they bear in proportion to the total weight of the plants themselves.

Being often highly roasted or cooked, prepared cereals are much more easily digested by invalids, delicate children, and aged persons.

Gardner's patent "Rapid" Sifter and Mixer, freely used for above. Prices from 50/- to £100. Catalogues from Wm. Gardner & Sons, engineers, Gloucester.

Breast Tea or **Pectoral Tea.**—An infusion composed of 8 parts of althea, 4 parts of coltsfoot leaves, 3 parts of Russian glycyrrhiza, 2 parts of anise, and 1 part of orris.

Brewers' Grains, Draff, etc.—The refuse of malt which has been used in brewing or distilling is called *grains*, and when fresh and sweet is chiefly fed to horses and cattle. The lees, dregs, wash, or swill is called *draff*, and usually served to swine.

Brick-bat Cheese.—So-called from its form; made chiefly in Wiltshire, from a mixture of new milk and cream, turned with rennet. The curd being put into a wooden vessel or mould, the shape of a

brick, is then pressed and dried in the ordinary way.

Brick-dust.—See *Bath Bricks.*

Brick Tea.—(See also *Teas, Chinese Tea, Caravan Tea*, etc.)

Brick Tea is one form of compressed tea. There are several others, such as Log Tea, Tablet Tea, Tile Tea, etc., taking their names from the various shapes into which they are pressed. It is said that more tea is sent from China in these forms than in any other.

They are packed thus in both China and Japan, to render them less bulky and more portable and convenient for transport over the long and mountainous regions between these countries and Russia, Siberia, etc. Brick Tea is, however, mostly manufactured and packed in Foochow and Hankow, where there are several factories belonging to Russian firms. The cheaper qualities of tea leaves, clippings from the tea-bushes, including stems, twigs, and broken leaves, also old teas left over from previous years, are all reduced to powder and mixed together. The quantity necessary to make a *brick* is placed in a cotton bag and softened by steam; the moist dust is then poured into a wooden mould, covered with a light layer of dry tea-powder of better quality, and pressed either by steam machinery or by blows from a heavy mallet until of the required consistency. It usually comes out of the press in hard solid rectangular blocks, but these bricks are of various degrees of compression; some kinds are only lightly squeezed into a loose mass. They are then carefully dried for about a fortnight without access of the sun or any other direct source of heat. Those lightly pressed are usually wrapped in paper and sewed up in cow-hide bags; while the more compact and resonant cakes are ornamented with gilt characters impressed on their surface without the least trace of leaf structure, and it requires an axe or hammer to break them.

The first cost of the tea-dust is about 1½d. per lb., and that of manufacture, export duty, packing, etc., about doubles the price, so that the total cost of the lower qualities of brick tea is only about 3d.

A large quantity is taken from China to Kiachta, where it is sold to the Armenians, Tartars, as well as to the Thibetans and Mongolians, who distribute it through the Russian provinces of Eastern Siberia.

The Tungou, Kalmuk, Khirghi, and Buratria natives use immense quantities of it. In Mongolia, where the pastoral population of herdsmen have little use for money, their tents, clothing, food, and temples being supplied by their flocks, Brick, or rather *Tile tea*, forms a standard of value and a convenient medium of exchange or barter, as it is in universal demand as food. After exhausting the compound with hot water in the ordinary way, these poor people regularly chop it up, and boil it either with mutton fat, butter, or *koumiss*, and the food is consumed hot in a liquid condition.

In fact, tea forms the staple food of Thibet; it is often prepared by churning the boiled tea with salt, soda, and butter; this mixed with a little barley flour is made into a sort of paste something like oatcake.

The people always add a little carbonate of soda to the water used in brewing their tea from chunks of these bricks.

Although much brick and tile tea is undoubtedly made up of inferior materials, and a little rice water often added to combine the brick and make it retain its form, yet the stories about blood and other substances being frequently mixed with the tea-dust are probably exaggerated. The absence of scent and flavour is owing to the steaming to which it has been subjected.

There are also *large green bricks* of the coarser sorts of tea-leaves (not dust) as well as small green bricks made of a better kind of tea, but both these are much sought after by the nomad tribes of China and Central Asia. The larger green bricks, in size 13 by 6½ by 1½ inches, weigh about 2½lbs. each, thirty-six large or seventy-two small going to

the "basket" when for export. The *small green*, 8½ by 5¼ by 1⅞ inches, are of finer quality, and bring a higher price. The third quality, *small black*, are of same size, and it is mostly these small *black bricks* made from tea-dust which go into Siberia.

Bride or Wedding Cakes. — F. *Gateaux de noce;* Port. *Pasteis de boda;* Sp. *Pasteles de boda;* W. *Teisen briodas.*

Grocers might do more trade in these as well as birthday-cakes, by first making themselves acquainted with the qualities, styles, and prices of the best makers, and then taking orders from families.

Most of the leading biscuit manufacturers employ first-rate artists in icing and decorating them, and keep up a stock from which to supply the trade on the shortest notice. The selection of a cake for the "happy event" is very properly a matter demanding much thought in feminine coteries. The weight, style and price per lb., with extra cost for ornaments, are all important matters.

A prettily ornamented cake of 10lbs. may be had for about a guinea.

Some firms have elaborate sketches or photographs of vases and ornaments which they send out for parties to select patterns preferred.

Brie Cheese. — F. *Fromage de Brie.*

A soft, salted, white cream cheese, made in the ancient province of Brie, in France, from pure cow's milk. Component parts:—Water, 34; nitrogen, 5·1; fat, 53·3; various, 7·6.

Fromage de Brie keeps well in the original boxes. If they should get soft, will harden on being exposed to the air by removing the cover from the box and putting them in a cool place. If too hard, can be made soft by putting them under a glass cover. If the wrappers become soiled or moulded, it is well to rewrap them in fresh paper.

Brillantine. — There are several of these preparations for polishing metals, glass, &c.

(1) Say one part of castor oil mixed with 4 parts of eau de cologne.

(2) 1 oz. of honey, ½ oz. of glycerine, and ½ oz. of eau de cologne, mixed with 2 ozs. of spirits of wine.

(3) 1 part glycerine, 3 parts castor oil, mixed with 60 parts of rectified spirit.

Brimstone.—See *Sulphur.*

Brine (for Pickling Meat).—F. *Saumure;* W. *Heli.*

This is made of salt and water, say 2lbs. of common salt boiled in a gallon of water, or 3lbs. of salt dissolved in a gallon of cold water. The above is best adapted for *vegetables;* if for pickling *meat*, use bay salt, and add 1 oz. black pepper, 1 oz. of saltpetre, and 12 ozs. brown sugar to each pound of salt, and boil for 20 minutes.

Best made from 3lbs. each of bay salt and common salt, with 1lb. brown sugar and ½lb. saltpetre, to each gallon of water. Boil and skim, and when cool it will be ready for use.

For some purposes a pound or two of bruised pimento or black pepper is an improvement.

Bringen or Liptau Cheese. — A Continental kind made in Hungary. Constituents:—Water, 34 per cent.; fatty matter, 28; Caseine, 23; salts, 5.

Brinjal. — See *Egg Plant.*

Brioches and Brioche Paste.—F. *Brioche;* G. *Apostelkuchen.*

Brioche paste is a species of paste or crust prepared from eggs and fine flour, fermented with yeast, to which are added a pinch of salt, a large quantity of sugar, and the whole worked in about half as much of butter as there is of flour. Besides Brioche halfpenny-loaves for shop sale, it is often used with soup, and as a casing for lobsters, patties, eggs, etc.

Briquettes.—There are three or four kinds of this fuel now manufactured from coal-dust, slack, saw-dust, etc., with a binding ingredient, such as tar, pitch, or clay, and pressed into blocks. The chief is made from coal-dust, others are made from petroleum, and in Victoria they are made from the lignite

fields of that colony. These latter yield about 44 per cent. of volatile matter, 31 of fixed carbon, 10 of ash, and 14 of water. Another kind is now being made at Gloucester, in which slack is the foundation, but so amalgamated with chemicals that the sulphur is eliminated, smoke abolished, and the heating power thus economically intensified.

The *Moniteur Officiel du Commerce* for August 2nd, 1894, gives the following as the formula of Signor Maestracci, of the Italian Navy, for obtaining briquettes of petroleum.

With a litre of petroleum there is mixed 150 grammes of triturated soap, 10 per cent. of resin, and 333 grammes of caustic soda. This mixture is heated, care being taken to stir it; when solidification begins, at the end of about forty minutes, observation is made as to the progress of the operation. If the mixture shows a tendency to overflow, some drops of soda are placed on the receptacle. The stirring is then continued until the solidification is complete.

The material is poured out into moulds so as to form the briquettes, which are then placed from ten to fifteen minutes in a stove. They are finally cooled, and can be used a few hours afterwards.

To the three elements constituting the above mixture Signor Maestracci recommends further the addition of 20 per cent. of wood shavings and 20 per cent. of clay or sand, which makes them firmer and more lasting.

An equal weight of these briquettes supplies about three times the heat of ordinary coal briquettes, and there is no waste.

In the process for making petroleum briquettes, described in "*Kuhlow's*," petroleum refuse is worked up in such a manner as to assume the form of a solid substance, easily handled, and constituting a cheap and convenient fuel. About 10 per cent. of soda lye, with about 10 per cent. of any fatty matter—tallow, for instance, is heated in a boiler, either by superheated steam or with exclusion of air; and so much petroleum refuse is then added to the heated mass as to make up one hundred parts. The whole is heated, with constant stirring, for about an hour, the time varying with the mode and intensity of heating; but the temperature must never be allowed to reach the boiling-point of petroleum, because in that case a large quantity of froth would form. In this incipient state of saponification the mass acquires the property of taking up large quantities of very fluid rock oil, and if this incorporation of the mass should proceed too slowly or remain incomplete it may be hastened by the addition of a little soda lye. In a short time the saponification of the grease with the fixing of the petroleum will be effected, and the mass thus produced may be run into moulds and allowed to cool, when it may be cut into pieces of any desired form. According to the use for which the briquettes are destined, they can during manufacture receive the addition of coal-dust, sawdust, and other refuse, and, if it be desired to obtain a product of less firm consistency, the grease may be entirely or partially replaced by resin or resin acid, the product in either case containing more than 80 per cent. of petroleum, more than 90 per cent. of combustible substances, and less than 5 per cent. of incombustible residue.

Briquettes from petroleum residues are also made by M. Louis Ghilini and Madame H. Sauvayre. The inventors prefer to use residues of naphtha, which they saponify by means of a caustic lye of 20° B. The naphthas are known as astakli. When the saponification is finished the product is mixed with resin and the whole is heated, well stirred, and poured into appropriate moulds. The proportions employed are as follow:—Astakli, 50 kilos.; lye, 15 kilos.; rosin, 8 kilos.

Turf Briquettes.—In Pomerania there is a factory at Langenburg where briquettes are made from moor turf by patent machinery. The fresh turf is first thrown into a machine resembling a turnip cutter and broken into small lumps. Then it passes to a second breaker, and is ground into mull or fine powder. Next it goes into a drier, or

steam cylinder, which is filled with exhaust steam from the engine, and is perforated by tubes much in the manner of boiler tubes, but larger. This cylinder revolves, and, being on a gentle slope, the mull passes slowly through the tubes, and by this means becomes thoroughly dry. From the drier it passes to a hopper, which feeds the "plunger." This plunger is worked by a 75-horse-power engine, and, by pressing the mull in a form against the preceding briquette, pushes them forward, each stroke the width of a briquette.

The factory turns out 80 briquettes a minute, or 35 tons a day, at a cost of about 7/- per ton for material and labour. The briquettes are retailed at about 6d. per 100. They give a good red heat, and last longer than any coal. Here is scope for turning the moors of the British Islands to a profitable use!

Another new kind of briquette has been invented by the Aktieslskabet den Tekn. Kem. Resin is melted in petroleum or other liquid combustible. The mixture is stirred for about ten minutes, during which time caustic soda is gradually added, and also sawdust or other filling. The process is finished when the product has acquired a sufficient consistency.

Hygienic Briquettes.—A briquette due to M. Auguste Saintaraille, is called the hygienic briquette, and is made by preparing a paste of two parts resinous wood shavings, one part powdered coal, and one part resin, mixed hot. The paste is compressed into moulds into the shape of Maltese crosses, which can be lit with a match. The combustion of these briquettes gives out a slight odour of turpentine, which is both agreeable and healthy.

Brisket of Beef.—F. *Brêchet de bœuf*; W. *Y barwyden.*

The brisket is the breast of the animal, or that part of the breast that lies next to the ribs.

Bristol Bricks.—See *Bath Bricks.*

British Brandy.—A common kind of brandy distilled in England from malt liquors, and given a flavour and colour more or less like French brandy by artificial means.

It may be called an artificial production, often made by adding to every 100 parts of proof spirit from ½lb. to 1lb. of argol, some bruised prunes, and a quart of good Cognac. The mixture is then distilled, and a little acetic ether, tannin, and burnt sugar added.

British Gum.—See *Dextrine.*

British Sherry is generally made either from Cape or raisin wine, or from dried raisins, flavoured with a little bitter almond cake (the pulpy mass remaining after the oil has been expressed from the almonds) or else the oil of almonds itself, and a very little of sweet-briar, orange water, or orris.

It is also sometimes produced from very strong pale malt wort, sugar, yeast, and rectified spirit, and flavoured.

British or **Home-made Wines.**—These are made up from various fruits, flowers, leaves, or spices, and most of them contain a great proportion of citric or malic acid, which acids are soluble and dissolve in the liquor. In order to neutralise this acidity it is the custom to add cane sugar (not *beet*), and only a little spirit to prevent the fermentation the sugar would cause. Hence the difference between wines made from the grape and those made from the gooseberry, etc. The use of unfermented grape juice is, however, now largely imported for British wine manufacturers.

British wines, although often drunk by teetotallers, are frequently stronger than many of the foreign wines, in consequence of the sugar employed being converted by fermentation with the raisins into alcohol. This, together with the spirit introduced before bottling to keep the wines clear, often amounts to 20 or 30 per cent. of true spirit, and, of course, renders the product a powerful intoxicant. (See *Sweets.*) On the other hand, British wines sometimes contain a great deal of unfermented sugar, or they have become "pricked" (see *Pricked Wine*), and are consequently apt to derange the stomach. Some of the very low-priced makes are nothing more than coloured water and

sugar mixed, with just sufficient of the refuse of distillery oil to keep it from turning sour.

At one time their manufacture formed an important part of the education of the good housewives of Great Britain, vide Goldsmith's "*Vicar of Wakefield.*" They were made from plums, apples, gooseberries, bilberries, elderberries, blackberries, currants, raspberries, cherries, cowslips, parsnips, raisins, greengages, damsons, rhubarb, ginger, oranges, and lemons. Less common were wines from mulberries, quinces, peaches, apricots, and from the sap of the birch, beech, sycamore, and other trees.

British port is often made from damson juice, with spirit and other ingredients; sometimes from old cider, elderberry juice, sloe juice, extract of rhatany, with rectified spirit and flavouring. Most of these British wines are referred to under their respective names. A retailer requires a five guinea annual licence, which begins on July 6th, and must have his name painted over the shop door.

Every holder of only a *retail* licence should carefully explain to his assistants that not more than *eleven* bottles must be sold at one time (as is clearly stated on the licence itself). Excise officers often trap juniors into selling or invoicing 14 or 16 bottles at once, and then a summons follows.

Brittany Butter. — See *French Butters.*

Broad Beans comprise the Long pod, the Windsor, the Aquadulce, and other varieties. In gardens they are usually sown between February and May in rows about eighteen inches apart and three inches deep, at the rate of a quart per row of forty feet.

Broccoli. —F. *Choux Italiens;* G. *Italienischer Kohl;* Lat. *Brassica botrytis;* W. *Math o fresych.*

This word was formerly spelt with only one "c." The plant is of very untrustworthy growth, only moderately hardy, and often killed wholesale in hard winters. In season during winter and spring; should have large white-hearted compact heads, and be free from any tinge of yellow or green, either of which indicates inferior quality.

Broccoli sprouts are purple in colour and not compact in the head. (See *Cabbages.*)

Brochettes. — See *Crystallised Fruits.*

Brom.—A Javanese beer obtained by the fermentation of rice, but not the product of distillation.

Broma.—A breakfast powder made by mixing 1lb. of pure cocoa powder with about 4 ozs. each of sugar and sago meal.

British arrowroot (prepared potato starch) is sometimes substituted for the sago, and occasionally wheat flour.

Bronze Powder and **Bronze Leaf.** —F. *Bronze en Poudre;* G. *Bronzefarben;* Sp. *Polvos de bronce.*

Are prepared in several ways.

(1) Of Dutch metal or gold leaf ground to an impalpable powder.

(2) Gold is dissolved in nitro-muriatic acid, and precipitated with a solution of pure proto-sulphate of iron, then washed and dried.

(3) Gold leaf is ground with honey to an impalpable powder, the honey then washed away and the powder dried.

(4) Gold leaf is triturated with crystallised sulphate of potassa, and the salt washed out with boiling water.

(5) A large quantity of Bronze Powder and Bronze Leaf is made in and near the cities of Furth and Nuremburg, in Germany. They are composed of copper, tin, zinc, and antimony melted in proper proportions. The cheaper qualities of powder are usually mixed with quartz powder to enable them to be sold cheaply.

Broom Corn.—A coarse grain plant raised in the United States mainly for the fibrous stalks, which are used for making brooms and brushes. Three-fourths of all the broom corn of the world is grown in the country around Arcold in Central Illinois.

Brooms.— F. *Balais;* G. *Besen* It. *Scope, Granate;* Port. *Vassoura*

Sp. *Escobas*; Rus. *Metlii*; W. *Banadl*.

Besoms or brushes, with long handles for sweeping floors, derived their name of *brooms* from being originally made of the broom plant, but the best, both for flexibility and durability, are made from ling, or heath.

They are now commonly made of bass (the well-known fibre of the Piassava plant of Brazil), birch, broom, or heath, also of bristles, sorghum stalks, etc.

Vast quantities of brushes, brooms, etc., are made in Southwark for the London markets. Birch brooms are most commonly used in gardens, and are those to which the name *besom* applies.

Metallic Comb Brushes have a large sale in India, as well as in Jewish communities, owing to the superstitious regard of the uncleanness of everything porcine, including bristles.

Broom-handles or *broom-sticks* are made by passing the stick longitudinally through the hollow mandrel of a lathe with internal cutters, and are thus rounded through their whole length. Large numbers are imported from Canada and the United States.

Brose.—See *Scotch Brose*.

Brou de Noix Liqueur. — A French home-made cordial, almost black in colour, prepared from young walnuts while green and milky. These are infused in spirits, and the product is finally sweetened and filtered.

Broussa Tea. — The leaves of *Vaccinium arctostaphylos*, Linn.; used at Broussa, and sold at about 8d. per lb.

Brown Boot Polishes.—For these polishes, creams, pastes, etc., take of Yellow Wax 3½ ozs., Yellow Soap ½ oz., Bismarck Brown 3 drachms, Potass Carb. 1 drachm, Boiling Water 10 ozs., Turpentine 10 ozs. Dissolve the soap, potash, and dye in the water, and add the mixture gradually to the wax and turpentine melted together. Rub together until quite cold. This will give a good non-sticky polish, if only a little be used at a time, and the boots will be well polished with a soft cloth after applying the paste.

Cream for Sea-Side Shoes.—Melt 300 parts of yellow wax on a water bath, and add 1,000 parts of oil of turpentine. Dissolve, separately, 120 parts of resin soap in 1,000 parts of water, and stir the mixture in with the wax and turps. When cold, a frothy paste results, which is coloured with a solution of 15 parts Nankin brown in 75 parts of alcohol.

Cream for Brown Boots.—(1) Mix 1,000 parts of yellow Petroleum Jelly, or Paraffin Wax, 70 parts of olive oil, 500 parts of ceresin, and 1 part of leather yellow. The last ingredient is added as a colouring matter to the hot mixture.

(2) Melt 4lbs. paraffin wax with 2lbs. napthaline and 1lb. soft soap; 1 gallon of warmed paraffin oil is then stirred in, and a little oil, brown colour, scented with mirbane, is added.

Special Manufacturers. — Day & Martin, Ltd., London and Liverpool (see adv., near end of book); E. Mitchell & Sons (tan polish), 5 Burnett Place, Bradford, Yorks; John Parkes & Co., Priory Works, Warwick.

Brown Bread. — See *Whole Meal Bread*.

Brown Windsor Soap. — See *Windsor Soap*.

Browning or **Gravy Salt** (sometimes called *Browning Salt, Brown Gravy Salt, Parisian Essence, Couleur Parisienne*, etc.).—A fluid preparation used to colour gravies, beef tea, soups, etc. A good one is made of following proportions—say 1lb. of caramel (burnt sugar), ¼lb. common salt, and half a pint of mushroom ketchup flavoured with spices. Some use strong beer, wine, or water, instead of the ketchup.

Special Firms.—Charles Cocks & Co., Reading, Berks; Allen Jeeves & Sons, Seddington, Sandy, Beds.

Brunswick Black.—(1) Generally made of asphaltum, boiled linseed oil, and oil of turpentine; say two parts of the first melted and mixed with one part of the second, and afterwards a sufficient quantity of the third stirred in to reduce it to the thinness desired.

(2) Take 7lbs. of pitch and 7lbs. gas-tar asphaltum, boil in an iron pot from seven to ten hours with frequent stirring, and when all moisture is out add two gallons boiled linseed-oil previously heated; then add 2½lbs. of litharge and 2½lbs. of red-lead, and boil for three hours, or until some of it will set hard. Then let it cool down and add five gallons of turpentine, or as much as will reduce it to the consistency required. When applied it should dry in from twenty minutes to one hour.

(3) If wanted cheap, and one hour will do, more oil and less turpentine is put in, and sometimes extra of asphaltum and less of red-lead.

(4) In the cheapest kinds common black pitch is used in lieu of asphaltum.

Special Firms.—Day & Martin, Ltd., London and Liverpool; John Parkes & Co., Priory Works, Warwick; Paton Calvert & Co. ("Komo" Black Enamel for Grates, etc., etc.), Leeds Street, Liverpool (see "*Komo*").

Brushes.—F. *Brosses;* G. *Buersten;* It. *Setole, Spazzole;* Port. *Escovas;* Rus. *Schtschetki;* Sp. *Brozas, Cepillos, Escobillas;* W. *Ysgubellig.*

Enormous quantities of fibres are used in brush making, after being steeped in hot water or steamed to make them supple and to prevent them breaking. A Madagascar palm has lately been found to yield a similar substance, and, more recently, the long coarse fibres composing the petioles of the wine palm of tropical Africa (*Rafia vinefera*) have been largely employed under the name of "Lagos bass," and still more recently another bass has been procured, Palmyra palm (*Borassus flabellifer*) of Ceylon and Southern India.

A selected stock of these, along with Brooms, Mops, Sponges, Chamois Leathers, Housemaids' Gloves, Mats, Kneelers and Boxes, Tamis or Tammy Sieves, Flannel, Toilet Combs, Curry Combs, Mane Combs, and Jelly Bags, forms an excellent and profitable auxiliary to the business of the family and country grocer. The most salable are sweeping brooms, scrubbing, shoe, banister, stove, plate, horse and flue brushes; crumb brushes, hair brushes; tooth brushes and nail brushes also sell well. The best brushes and brooms are those made of bristles, the long, stiff hairs which grow on the backs and necks of hogs in Russia, Germany, and other Northern countries; the white Okatka bristles from Russia being the best of all. Hat brushes, babies' hair brushes, boot polishers, etc., of good quality, are made of horsehair or strips of whalebone. The commoner sorts are usually made up of vegetable kinds and fibres, Esparto grass, Kitool fibre, etc. Bristles are of several colours; the whitest are called "lilies," and are mostly used for making best tooth-brushes; others are black, brown, grey, or yellow.

The Chinese black bristles, hard and brittle, with a glossy surface, are extensively used; but although they may be elastic and have an excellent spring, it is a metallic elasticity like fine steel wires, and they break off in use, thus wearing out faster than the Russian, German, and French, black or white, which are tougher, better, and much cheaper in the end.

Bristles are combed or "dragged" and sized according to length, and sold by "bristle merchants" in bundles, at prices varying from 1/6 to 30/- per lb., according to quality and length.

The best hair brush is made of all Okatka bristles to get stiffness; but they have to be of different lengths to render the brush penetrating, so as to enter the hair.

The high cost of bristles gives rise to all kinds of imitations, and it is not easy for a novice to distinguish a brush of genuine bristles from one made of other cheaper materials which are substituted, mixed, dyed, and glossed so as to deceive the public wholesale. Frequently the inner knots of a brush or broom are all composed of fibre, while the outside knots are of bristles of the same colour. Sometimes the materials are mixed. The fibre of the American agave and especially that of the broom corn (*Sorghum vulgare*) are largely used, also the leaf stalks of the African bamboo palm. As a rule, if a knot of

bristles be crushed or flattened down by the thumb it will right itself again quickly, but if of fibre it will remain crushed or crooked, and will not rise again.

Remove one or two of the suspected hairs or fibres from the brush or broom and burn it in the gas jet or candle, and the smell will show whether vegetable fibre or animal bristle.

True bristles will frizzle up and leave no ash, but fibre burns without smell and leaves an ash.

Jews, Turks, etc., who look upon the pig and all its belongings as vile and unclean, are much averse to using brushes made of bristles, hence must have articles made of horse or cow hair, fibres, etc. Retailers should remember this.

Brushes are now mostly made by machinery. The various knots of fibre are *punched into* the holes of the wood stock, which can therefore be made solid throughout. The punching is effected in such a way that the knot is held firmly in position by a piece of stout steel wire, which sticks in the sides of the holes. No pitch is used, and the brushes and brooms so made are able to withstand a good deal of rough usage.

Brushes are often spoilt by leaving them in water; the water not only injures the bristles, but melts the glue used in making the brush. When washed they should be dried quickly.

The best makers stamp their name or trade mark on every brush.

Brush, broom, and basket-making are industries which have been found to be specially adapted to the blind, hence here is a growing preference among the principal consumers for the articles produced by this afflicted class. They should be stamped "Made by the Blind."

Machine-made goods may be cheaper and look smarter, but the best judges prefer the hand-made.

Brooms and brushes of all sizes are best stored and displayed in a sloping show case, covered with a glass lid. The largest brooms are arranged at the back and the smallest at the front. The brushes are thus all kept free from shop-dust and unnecessary handling, and the customer standing in front can easily see every brush in the case—scrubs, shoe, stove, dandy, horse, clothes, bannisters, and brooms of hair, bass, or fibre. Without some such arrangement brushes soon get either soiled, misused, or mislaid, and unsalable. The case should be on the counter, and, if large enough, may also contain wash boards, tubs, pails, churns, and other whiteware.

Parnall & Sons, Narrow Wine Street, Bristol, also sell a very convenient and cheap stand for long-handled brooms and brushes.

Brussels Sprouts or **Borecole.**—F. *Choux de Bruxelles;* G. *Rosenkoln;* L. *Brassica oleracea fimbriata.* (See *Green Fruits*, etc.)

The favourite variety cultivated in this country are known as the Imported, although there are others stronger in growth and productive of huge sprouts.

They sell best in October, November, and December, and should be sown in Autumn or February or March. To make them "button" well, plenty of water and hardy growth is desirable. The largest and tightest buttons are the best, but loose or open sprouts are lightly valued.

Bucellas.—A rich dry, white wine, produced near Lisbon, in Portugal, from vines transplanted from the Rhenish districts of Germany. Bucellas usually contain about 12 per cent. of absolute alcohol, and seem to have the flavour and general properties of Rhenish wines.

Buckinghamshire Cheese. — A noted soft cream cheese, but, like most cream cheese, will not keep very long.

Buckwheat, Brank, or **Saracen Wheat.**—F. *Sarrasin, Blé Noir;* G. *Buchweizen, Heidekorn;* It. *Grano Saraceno, Faggina, Fraina;* Pol. *Tatarca, Gryka, Pohanka;* Port. *Trigo preto;* Rus. *Gretscha;* Sp. *Alforfon, Trigo Saraceno, Trigo Negro;* W. *Gwenith yr Hydd.*

The buckwheat plant, *Polygonum Fagopyrum esculentum*, is a native of Siberia, where it is extensively cultivated

as a bread corn. It is now grown very much in Holland, as may be inferred from the quantity of hyacinths and other Dutch bulbs coming over here packed in its dark brown husks; and is more cultivated in France (Brittany and Normandy), Germany, and America than in England, where indeed it is seldom sown except for pheasant food.

Buckwheat is not really a *cereal* or *grass* at all, but belongs to the *Polygonaceæ* family of plants, of which the rhubarb, the common dock, and several other weeds are also members. It grows two or three feet high, with a knotty branching stem of a reddish colour. Its leaves are ivy-shaped, its flowers are white and hang in bunches, and bees are particularly fond of them. The plant is an annual of easy culture, growing on the poorest soils, sandy heaths, moorlands, and requiring very little attention or manure. A sowing of 1 to 1½ bushels yields 30 or 40 bushels an acre, and weighs 46 to 48lbs. per bushel. It is sometimes sown that it may be cut young and green for cattle, or ploughed down green as a dressing for wheat. It will keep on flowering a long time, but unless harvested when the bottom seeds are ripe they will be shed and lost in the field.

The seeds resemble beech-nuts, whence the name (*buck*, beech), and make very good food for milk cows, hogs, poultry, as well as game, but are apt to produce skin eruptions on horses. In the backwoods of America they are ground and used as porridge or hasty pudding with maple honey, and considered very delicious. In fact, throughout the United States buckwheat is largely made into cakes or crumpets, and eaten for breakfast hot from the baker's. These cakes have great renown, but being deficient in gluten, the flour cannot well be made into bread.

Some of the buckwheat flours have been found to be adulterated with ground cokernut shells.

Buckwheat is used in much the same way in Brittany, Vendee, and the poorer districts in the centre of France, where "*galettes*" or "*crêpes*" (pancakes) are commonly eaten with milk. There is, however, a bitterness noticeable in most of these preparations.

Buckwheat is also extensively used in gin distilleries.

Buda or **Ofen Wine.**—An Austrian product once very popular in England.

Budram, Mwdran, or **Brwchan.**—A gruel made in Wales, by steeping oatmeal in water for 24 to 36 hours until it begins to ferment, and then boiling and skimming to the desired consistency.

Buhach.—See *Insect Powders*.

Bull Butter.—Spurious butter, made from fats and tallow of the abattoir instead of milk or cream; a rendering of all available animal fats. (See *Margarine*.)

Bullaces.—F. *Prunelles;* W. *Aeron Gwylltion.* (See also *Sloes*.)

A wild species of plum, *Prunus insititia*, the tree or bush differing from that of the common plum, chiefly in its dense bushy form, its spiny or prickly branches, and its smaller leaves. The fruit is round, of damson colour, about half the size of a cherry, and very sour. They are larger than sloes, but seldom gathered in England.

In France they are gathered and preserved in brandy like plums and cherries. They are also made into a special liqueur called *Prunelline*.

Bullet or **Bully-tree Milk.**—This is the sap or milk obtained in Dutch Guiana from the leaves of certain large forest trees of the Sapotaceæ order, called *Mimusops balota*.

It is chiefly extracted for the purpose of being made into *balata*, a superior species of gutta-percha. A gallon of milk will dry to about four pounds of balata. A considerable amount of the liquid is used by the bush negroes for mixing with their chocolate.

To drink spirits immediately after partaking of this bully-tree milk is well-known to be highly injurious.

Bummaloe Fish or **Bombay Ducks.**—Packed and retailed in 1/- tins. A small, glutinous, transparent kind of fish about the size of a smelt, found on

the coasts of Southern Asia, and when dried is much used as a relish by both Europeans and Indians. Often humorously called *Bombay Ducks*.

Bungs, Shives, etc.—F. *Bondes*; W. *Bwing*. (See also *Corks*.)

Bungs for casks are generally made of oak, beech, or sycamore wood, as being less porous than cork. Those circular discs, either of cork or wood, which are larger in diameter than in length, are termed cork shives, wood shives, white shives, or compressed shives. Shives vary from ⅞ to 2½ inches in width by about ½ inch in thickness. Soft wood shives may be ½ to 3 inches wide, and are sold at 1/4 to 4/3 per gross.

In driving in bungs, etc., the grains should be in agreement with that of the cask stave.

Buns.—The origin of the word is attributed to the old French word "bugne," signifiying a "swelling," hence "bugnet," the puffed loaf. But lexicographers do not like to be dogmatic, and prefer to leave the origin of the word "bun" in doubt. In the fourteenth and fifteenth century it had the shape of "bunne." In Hone's "Everyday Book" (1825) *hot-cross buns* are described as "consecrated loaves bestowed in the church as alms, and to those who could not receive the host, made from the dough from whence the host itself is taken."

There have been many accounts given as to the origin of these, but that given by Canon Donlevny, of Edinburgh, should be worthy of quotation. During the observance of Holy Week, the Church in early times was far stricter in the matter of fasts than she is now. Only a certain amount of bread could be eaten, and that was duly marked off in the dough by two lines to show its *length* and *breadth*. These loaves were sold in some churches, and were carried from place to place by pilgrims, and so the custom was continued of crossing the bread used on Good Friday long after the occasion for it passed away. It used to be a common belief that bread baked on Good Friday never grew mouldy, and the same belief has extended to hot cross buns, one writer suggesting that the spice preserves them. A piece of the bread baked on Good Friday was carefully preserved far on in the year, and it was considered a sovereign remedy against the house getting on fire. Others preserved a piece of it for whooping cough, and for giving to cattle to cure certain diseases. But in Asia Minor the belief as regards Good Friday bread was quite different. There, no one would make bread at all on that day, believing that the water so used would change into blood, and that when the bread was eaten a deadly sin would be committed.

Recipe for Hot-Cross Buns.—Two pounds of flour, half a pound of sugar, quarter of a pound each of butter and lard, one pound of currants, two ounces of yeast, and half a pint of milk. Method: Rub the butter and lard into the flour, stir in the sugar and currants, make a well in the centre, and put in the yeast moistened with half the milk warmed. Let stand fifteen minutes, mix with the rest of the milk warmed, and stand to rise about half-an-hour. Divide into small pieces which shape with the fingers into flat cakes. Place by the fire until well risen. Cut with a sharp knife in the form of a cross, and bake in a brisk oven. When baked, brush over with milk thickened with sugar.

Spices for Buns.—The following formulæ for hot-cross bun flavouring are those used in different parts of the country, and may be taken as the basis for essences; but the powders are preferable, as giving that amount of brown colouring necessary for hot-cross buns.

LONDON FLAVOURING.

Powdered nutmeg	... ...	6 ozs.
,, mace	... ...	1 ,,
,, capsicum	... ...	2 ,,
,, cinnamon	... ...	4 ,,
,, ginger	... ...	8 ,,

Mix lightly and sift.

ENGLISH PROVINCIAL FLAVOURING.

Oil of cloves	... ...	10 drops
Powdered nutmeg	... ...	2 ozs.
,, ginger	... ...	1 ,,

Mix intimately in a mortar.

Jamaica pepper	2	ozs.
Cassia	1	,,
Cloves	½	,,
Ginger	½	,,
Rectified spirit	14	,,
Water	6	,,

Mix the water and spirit, and make a pint of tincture from the solids by percolation. To the product add 30 minims of oil of pimento.

SCOTCH FLAVOURING.

Powdered ginger	5	ozs.
,, coriander	5	,,
,, caraway	3½	,,
,, pimento	6	drms.
,, cassia	6	,,
,, cloves	1	oz.
,, nutmeg	½	,,

Mix intimately and sift.

One ounce of any of these flavours is required for every 7lbs. of flour.

Burghall or **Burghul.**—A prepared food, or boiled wheat, split and dried in the sun. Much eaten in Persia and Asiatic Turkey.

Burgundy Pitch. — F. *Poix de Bourgogne.*

A resin obtained by making incisions in the bark of the spruce fir, *Pinus excelsa*, whence it flows thickly and languidly, and soon sets into hard and brittle flakes, gradually taking the form of the vessel into which it is run. It is of white, yellow, and reddish-brown colour, melts readily in boiling water or glacial acetic acid, and is very adhesive, with an agreeable aromatic odour. The genuine comes from Finland, the Black Forest the Vosges, and certain hilly districts in the centre and South-East of France, and is much used in medicine. It is not produced in Burgundy. A fictitious kind called Common Burgundy Pitch is made in England, but is weaker and of disagreeable smell.

Another common substititue is *Canada pitch*, or hemlock resin, obtained from *Tsuga*, *Pinus*, or *Abies Canadensis*, and collected chiefly in Canada, New Hampshire, and Vermont.

Burgundy Wines.—F. *Vins de Bourgogne.*

There are two classes of Burgundies, the wines of Nuits and those of Beaune. They are mostly red. The white wines of the Nuits district are not much thought of, but those of Beaune (*Côte d'Or*) are more popular as dessert wines. The best red wines of Nuits are:—Chambertin, Clos-Vougeot, Romanee-Conti, Richebourg, Saint Georges, Vosne, Chambelle, Morey, Nuits, and Premeon.

The Beaune red wines in order of merit are:—Beaune, Corti, Chassagne, Pomard, Volnay, Aunay, Mouthilis, Sauterne, Savigny, Givry, and Mercury.

As a rule Burgundies are more generous, sweeter, and less rough than claret. They contain about 10 per cent. of absolute alcohol. *Clos-de-Vougeôt* is produced from vines over 300 years old. This with *Romanée-Conti*, *Musigny-Chambertin*, *Nuits*, *Richebourg*, *La Tache*, *Corton*, *Volnay*, *Pomard*, and some others, all rank as delicious and delicate wines. Unfortunately, they travel badly, while Bordeaux wines are much improved by transportation. The best for travelling is *Corton*, a sound and enduring kind. *Mâcon* and *Beaujolais* are also Burgundies, although better known by their own names, the latter taking its name from the district around the old town of Beaujeu. Of the *White Burgundies*, the best are those of the Beaune district, *Montrachet*, celebrated for its high perfume, *Blagny*, *Meursault*, the beautiful amber-coloured *Goutte d'Or*, *Buxy*, *Pouilly*, *White Mâcon*, *Vaumorillon*, and *Chablis*, which latter is a white dry flinty-tasting wine. Burgundies are very popular in France, and in the last century a remarkable controversy set in between professors of physic and men of science as to the comparative merits of Burgundy and Champagne. It lasted nearly a hundred years, when a solemn decree was pronounced by the doctors in favour of Champagne. The great Napoleon did not, however, agree to the verdict, and he continued to patronise *Chambertin*, a celebrated kind of Burgundy. The Burgundy district adjoins that for Champagne, and produces some 75

million gallons a year, and there has been a considerable increase in the British consumption of this wine during the last four or five years.

The name "Burgundy," as with "Champagne" and "Madeira," has now been made a regional appellation, and under no pretext will it be allowed as a generic term.

Burmese Pickled Tea. — Also known as *Leppett* or *Letpet Tea*

This is an article of local commerce in Burmah. Most of the pickled tea consumed by the Burmese is grown in Yaung Baing, or Tawng Peng, in the Northern Shan States, the whole State being given up to the industry. The plant yielding this tea has now been identified as the ordinary Assam tea plant (*Camellia theifera*), and often grows 60 feet high. Two crops are secured each year, only the young and tender leaves being taken. These, while still green, are thoroughly boiled in large narrow-necked pots made for the purpose, and are then poured into square pits dug in the ground about 6 feet deep, the side and bottom being lined with walls of plantain leaves, which prevent contact with the earth. The pit being filled with boiled tea and the juice from the pots, plantain leaves are placed on top and earth piled above these, stones and other heavy weights being placed on top. The pits are opened after some months, when the trading season begins, and the tea is sold to traders, who come with their caravans of bullocks to carry it down the Government road to Maymyo for sale in the Mandalay markets in long baskets, so packed that fermentation is prevented. In Upper Burmah and the Shan States the tea is sold in a dry state, and is prepared by boiling in an earthen kettle, salt being added when it is drunk. In Lower Burmah, however, it is largely consumed in the solid form, the leaves being soaked in oil, a little garlic or dried fish being added, and in this form it is regarded as a great dainty. Pony caravans from Hsipaw also carry it for sale to Mandalay and other neighbouring markets, and the Flotilla Company's steamers on the Irawady often carry hundreds of baskets of this tea as deck cargo. (See "*Watts's Dictionary of the Economic Products of India.*") At all family festivals it plays an important part, and no ceremony is complete without it. In the Upper Chindwin there is a trade in the seed as well as in the leaf. The leaves when picked are thrown into an iron cauldron full of boiling water, where they remain until they assume a yellow colour, when they are rolled by hand on mats, and are then ready for the traders, who carry them away in bamboo crates. If the tea is to be kept it is either buried in the ground or the crates are sunk in water. The seed, when intended for sale, is dried in the sun and carried away by the traders in mat-lined boats to a convenient landing-place, whence it is carried on coolies' backs to Manipur and Assam, where it has an excellent reputation for its germinating properties.

Little care seems to be taken of the gardens, which are situated on very steep hill sides; but they are wonderfully healthy, and if labourers can be got, a planter has only to search for the *red earth* areas, which are numerous all over the Upper Chindwin.

The plants become large enough to give a crop in three years if the garden is kept free from jungle; seed is borne in eight years, and in 15 years the trees are in full bearing, their normal existence being 40 to 50 years. Some 600 tons of tea is dealt with in this way yearly. The profits on the trade seem to be enormous; tea bought at the gardens at from 15 to 25 rupees for 360lbs. is sold in Mandalay at from 60 to 140 rupees. The trader makes over cent. per cent. profit on his outlay, and if he makes advances this is doubled.

Burnt Almonds or **Roasted Almonds.**—Used to colour and flavour liquors, also prepared with sugar, and dyed as a sweetmeat.

Burnt Cork.—See *Spanish Black.*

Burnt Sugar Colouring. — F *Caramel;* G. *Gebrannter Zucker, Zucker-couleur;* It. *Caramelle;* Lat. *Saccharum ustum;* Sp. *Caramelos.*

Burnt Sugar, *Caramel*, or *Sugar Colouring*, as it is indifferently called, is prepared in three forms:—(1) as crystals, (2) as a fine powder, and (3) as a thick and almost black syrup resembling treacle. The latter is the sort most commonly met with, and the best of it is made by heating *crystallised cane* sugar (not *molasses*) in an oil or metal bath to 210° or 220° C., when it begins to assume a brown colour, which goes gradually deeper. When the tumefaction is complete it is dissolved in water, and then concentrated by evaporation. It afterwards dissolves readily in water, and is employed in colouring wines, spirits, beer, vinegar, aerated waters, sauces, soups, gravies, and many other liquids. Good Caramel should give a *clear* solution, free from sediment, and without developing fermentation. If used in large quantity, or of low quality, it is apt to precipitate in the liquid to which it has been added, thus forming a muddy deposit or imparting an undesirable flavour, and giving much trouble.

Caramel occurs, as a matter of fact, during the roasting of all materials containing sugar, such as coffee, malt, etc.

Foreign caramel is imported in kegs of 1 and 2 cwts., also in casks of 4 to 9 cwts. Most of this is made in Germany from potato starch, or rather burnt glucose. Ordinary Caramel for colouring vinegar, etc., may be bought at 17/- to 22/- per cwt. For Brandy colouring, soluble in 10 per cent. O/P, 25/-to 30/-. For Rum colouring, soluble in 50 to 60 per cent. O/P, 35/- to 50/-. (See *Flash.*)

For colouring spirits the Caramel used should depend on the strength of the spirit. In fact, much depends on the purpose for which it is required, and when for use in colouring valuable liquids, it is decidedly safest to buy from firms of repute irrespective of a few shillings in price.

Burr Tea.—A beverage prepared by colonists of New Holland from *Acæna Sanguisorba.*

Burriana.—A kind of fruit grown in Valencia.

Burton Ales.—(See also *Ales.*)—The famed ales of Burton-on-Trent, in Staffordshire, which are the strongest kind in general use, are brewed with hard water, and, in fact, they owe their excellence in a great measure to the hardness of the Burton water, the River Trent containing an unusually large proportion of sulphate of lime, together with carbonate and muriate of lime. These exert a considerable depurative power on vegetable juices, superseding the necessity for finings; thus the ales brewed from this water become bright and clear almost immediately. The water from some of the Burton wells is so hard and salty that peas boiled in it are almost uneatable. Some brewers to make soft water like a Burton one, add four parts of sulphate of calcium, three of salt, and one of sulphate of magnesia; while others use specially-prepared hardening compounds, such as "Burton Crystals" or gypsum, for the same purpose. It was about 1823 that the idea occurred to the Burton brewers to produce Pale ale in competition with the Indian ale, but it was not till 1851 at the Great Exhibition in London that the Burton brew became popular.

Bushel.—F. *Boisseau;* W. *Pwysel.*

An imperial bushel is equal to 4 pecks, or 8 gallons, or ⅛ of a quarter, or 80lbs. avoirdupois, of distilled water, or 2218·192 cubic inches. The *Winchester bushel* contains 2150·42 cubic inches.

Bussorah or Basrah Dates.—See *Dates.*

Butter.—Da. and Sw. *Smor;* Du. *Boter;* F. *Beurre;* G. *Butter;* It. *Burro, Butirro;* Pol. *Maslo;* Port. *Manteiga;* Rus. *Masslo Korowe;* Sp. *Mantecilla;* W. *Ymenyn.*

There are in commerce several kinds of butter: Cocoa-butter, Dika-butter, Kokum-butter, Mahwa-butter, Nutmeg-butter, Shea-butter, but these are dealt with elsewhere, under their respective headings. Cow butters are the substances now before us. The first mention of butter is made in "Plutarch's Life of Caius Cæsar," when, at a banquet given in honour of the great

captain at the house of Valerius by the Milanese chieftains, "asparagus cooked in butter" was served up. The butter produced in England is of little importance, and most of that sold in the shops is of Irish, Colonial, and Foreign make.

Imports from	1899	1898	1897
Sweden . . cwts.	245599	294962	299214
Denmark . „	1430052	1465030	1334726
Germany . „	36953	41231	51761
Holland . . „	284810	269324	278631
France . . „	353942	416821	448128
U. States . „	159137	66712	154196
Victoria . . „	211744	124223	169075
N. S. Wales . „	43561	34391	23835
New Zealand „	111639	69949	76522
Canada . „	250083	156865	109402
O. Countries „	262331	269645	272312
Total . . „	3389851	3209153	3217802

besides some 50,000 tons of foreign margarine and about 30,000 tons of condensed milk.

With one cow to each ten of the population, England cannot possibly supply sufficient milk for the butter, cheese, etc., she annually requires, and her farmers profess to make better use of their time than butter-making.

Copenhagen has lately been ruling the prices of finest mild butters, and Danish has also been fetching the highest prices, but some authorities predict that Australian, Tasmanian, and New Zealand butters, which come frozen or *chilled* in firkins and cases, seem likely to oust some of the foreign importations. The frozen appears to keep the best; but butter merely chilled, or that kept long in cold storage is apt to lose flavour, go mouldy, and turn out very unsatisfactory.

Friesland Factory Butters come in 56lb. kegs.

Irish, in rolls, lumps, kitts, pyramids, and firkins (see *Irish Butter*).

Italian is generally very poor and insipid.

Canadian and other imported kinds are sometimes sold as "Prime Dorset" or "Best Devonshire," which is, of course, grossly unfair both to the English producer and to the consumer.

Devonshire Butter is usually made from scalded cream.

As to Argentina Butter.
Australian Butter.
Blended Butter.
Canadian Butter.
Creamery Butter.
Danish Butter.
French Butter.
German Butter.
Irish Butter.
Kiel Butter.
Ladled Butter.
Margarine.
Milk.
Normandy Butter.
Condensed Milk.
Cream.

Further information will be found under these headings.

The makers of Danish and Norman butters are by their co-operative and factory systems simply cutting the English farmers out of their own markets. The foreign article can, while fresh, be more depended upon for uniformity and regularity in delivery.

The annual consumption of butter per head is in England, 13lbs.; Germany, 8lbs.; Holland, 6lbs.; France, 4lbs.; New Zealand, 20lbs.

An average English cow in full milk should give 150 to 180lbs. of milk weekly, or, say, 600 to 700 gallons yearly; and about 2½ gallons yield 1lb. of butter. The amount of fat in butter ranges from 80 to 90 per cent., water 7 to 16 per cent. If more of the latter, it is injurious to the keeping properties of the butter, and liable to fine. Good qualities contain only 10 to 12 per cent., and *Salt* butter not more than 16 to 18 per cent. of water. Good colonial butters rarely contain more than 6 to 12 per cent., and Danish not more than 16.

By a mechanical process considerably more water may be incorporated, and analysts have been finding 20 to 25 per cent. in Irish; in one instance on record 42 per cent. of water was found.

Creamery Butter is butter made in factories which receive fresh milk from a number of the neighbouring farmers.

Factory Butter is a name given to butter blended on the Brittany plan, from the smaller farmers and cottagers either

at the factory or at market towns, which is mixed together, washed, and improved much as possible for resale and export in large quantities of uniform qualities. (See *Blended Butters.*)

The amount of salt employed varies from 1 to 15 per cent., and even 28 per cent. has been found; but there seems to be no clear distinction between salt butter and fresh butter; a degree of saltness allowed fresh butter in one county might constitute salt butter in another.

In Scotland fresh butter must be absolutely free from salt or any other preservative, but in England it may contain 1 or 2 per cent. of salt. Danish butter usually contains 1 per cent.

If the butter be badly made, salt may hasten its spoiling; if well made, salt may spoil its delicate flavour.

In regard to purity, it has not yet been clearly defined what purity in butter is; and there is no fixed standard. Hot brine is, no doubt, often purposely used to make it absorb as much water as possible, and farmers' wives have been heard to boast how many pints of hot water they could get into their butter.

The other ordinary adulterants of butter, besides water and salt, are animal and vegetable fats, boric and boracic acid—the latter, although professedly used as a preservative, is really considered an adulterant. Butter colouring is not much used in Scotland, although it is used almost everywhere in England and abroad, and it undoubtedly helps the sale of butter to place it in the market a nice bright lemon or primrose colour. Great care should, however, be taken not to choose cheese colour or an inferior annatto, as these produce a dull brick-red colour that injures the butter and also colours the butter-milk. The colouration with annatto is also objectionable, in view of the fact that this dye-ware is often worked up with stale wine, and has been found swarming with microbia.

Another undesirable colouring ingredient has recently come into use, viz., yellow azo dye-stuff. To detect it, take a small piece of butter, about the size of a walnut, and spread it out upon a white dinner-plate. Next take a pinch of fuller's earth (take care that it is not perfumed), and stir it into the butter; then watch the results. In a few moments a pink to a violet-red colour will appear if any of the yellow azo colouring-matters are present. The presence of a slight trace of the dye is indicated by the pink coloration, and the colour deepens according as there is more dye present.

How to detect margarine or foreign fats in butter.—Various methods have been invented, but the specific gravities of butter fat and foreign fat and their respective melting points perhaps afford the readiest means of distinguishing. Analysts are usually guided by the difference in the proportion of soluble and insoluble acids. If a carefully-selected fat has been substituted, it is best detected by examining the sample through a microscope under a polarised light. The following is considered a good test:—

Into a tubular glass called a *lactocrit*, properly divided and marked, which is placed in warm water, and which contains 1·5 cubic centimetres of sugar syrup, the butter which is to be tested is gradually introduced until there is altogether 10 cubic centimetres. The glass is then closed, slightly shaken, and placed in a wooden cover, which is swung very quickly round for a few moments by a string tied to it. Thus melted, the butter becomes divided into three layers: the outside consists of water, the central of butter fat, and the middle layer is a white emulsion most plentiful when the butter is pure, but never present in margarine; also if the butter be pure the fat is transparent in addition to the white emulsion being voluminous, but if the butter contains margarine the fat remains milky.

An easy method to distinguish margarine from butter is to take some pure butter and the suspected sample, and, after melting them both at the same temperature, to drop them on the same glass plate side by side. The margarine (or tallow) drop will be full of minute crystals (little white dots), but the pure

butter (or spermaceti) drop will show no crystals. An experimenter may quickly learn the difference in the patterns of such drops.

The character and purity of butter may also be examined by testing its refractive power. The apparatus of Amagat and F. Jean is very easy to use, and by means of this instrument the deviation of pure butter of the best quality is + 35°; that of margarine only + 5°; cotton-seed oil + 20°; while lards and suets give—deviations. A simpler test is to place pure butter in a test tube of thin glass and hold it over a gas jet, when it will soon froth; the more and easier it froths the less water there is in it. But place margarine in a test tube and heat, it will froth very little unless its butter percentage is high, and if milk has been used it will, along with other added matter, form at bottom as dross and can be estimated. Vegetable fats melt and remain as clear oil.

Test for Margarine and Lard.—Stir a little—half a teaspoonful or less—of the butter in enough sulphuric ether to dissolve it. By the time the grease is dissolved the ether will have evaporated, and the residuum will show, to smell or taste, whether it is butter, lard, or tallow. Two pennyworth of ether will suffice for several lots.

Again, pure butter yields a clear liquid on melting 10 grains in a test-tube, adding 30 minims of carbolic acid (Calvert's No. 2, diluted with one-eighth its weight of water), shaking, warming till clear, and allowing to stand. Most other fats form two layers.

Other rough and ready tests for margarine.—Take two or three pieces of sewing cotton lightly twisted together, and drew them through the substance to be tested. Then set the cotton alight and blow it out almost immediately. Smell at the cotton, and if it contain much margarine it will have the smell of a newly extinguished tallow candle, but the purer the butter the less smell there will be. Or, place a piece of clean lamp or candle wick in the suspected article and set it alight, margarine will smell more or less tallowy, and butter buttery. Margarine and fats may often be detected by the smell after rubbing them violently in the hands. Real butter also melts readily at a lower temperature than margarine. A solution of carbolic acid will melt butter, but it only slightly affects margarine. Again, if a piece of genuine butter be melted in a glass, there will be a residue of salt and water, but the melted butter itself will form a clear and transparent substance of pure natural butter. Now, if one takes a piece of margarine the melted substance has a milky appearance and is not transparent. A mixture of margarine and butter has, therefore, when melted, the degree of milkiness proportionate to its impurity.

Every well-wisher to the poorer classes must be glad to see margarine obtainable, but not palmed off as genuine butter.

Rancid Butter.—To restore this, use one pint of water to each pound of butter, previously adding 20 grains of chloride of lime to each pint of water; knead or wash the butter well in this mixture, afterwards re-wash in clean brine and flavour; or melt the butter in a water bath with animal charcoal, coarsely powdered, and previously well sifted to free it from dust; skim, remove, and strain through flannel, and then salt. The rancid flavour may also be got rid of by kneading the butter in water containing a small quantity of bicarbonate of soda.

Another method.—100lbs. is placed in about 30 gallons of hot water, in which ½lb. bicarb. soda and 15lbs. fine granular animal charcoal, free from dust, has been mixed, and the whole is churned together for some 30 minutes. The butter is next separated, warmed, and strained through a linen cloth, then resalted, coloured, and, if considered satisfactory, finally worked up with one-half its weight of fresh butter.

A better and simpler method is to wash the rancid butter with some fresh new milk and next with cold spring water. (Butyric acid, on the presence of which rancidity depends, is freely soluble in fresh milk.)

How to cut Butter.—It is a well-known fact that in the churning process the small fatty globules previously floating in the milk become concentrated and formed into a solid substance—butter. It is said there are about four millions of these globules in a pound of butter. Now the more these globules are bruised, burst, or cut, the sooner the butter goes bad. The experienced butter salesman, therefore, will always use a wire. After the tub has been turned out, he will cut the butter horizontally about the middle; then cut perpendicularly the upper half into two equal parts, and place these halves on the top of each other with the cut parts facing outward. In cutting the first few pounds and half-pounds from the top, he will cut them from the bottom half. He will not have any pieces lying about; he will never touch the butter with his hands; and he will not wipe his knife on the edge of the tub and leave scrapings there every time he serves a customer. Good butter-cutters can cut a pound of butter nine times out of ten just to the ounce, but the inexperienced always cut too much, and have many pieces lying about. If you are waiting on adults and cut too much, just mention it, and they will nearly always take it, and save you from cutting off; but when a child asks for a certain quantity give just what is asked for. It looks very disgusting to see a tub of butter all covered with pieces, and where the knife has been scraped on the edge of the tub.

Do not stick your knife in the butter when not in use. If your butter is turned out on slabs, and the salt should make its appearance on the sides, take a clean cotton cloth, wet it, and wrap it round your butter every night, and it will look fresh every morning.

To prevent butter sticking to the slab, slicer, beater, etc., scrub them every morning with soap and boiling water, and afterwards keep slicer and beater in cold water, and the slab wet.

Butter should, as a rule, be kept separate from everything else, as other goods are liable to change its flavour. It does, however, derive an agreeable aroma from a proximity to oranges. There is a very common mistake made in keeping sweet butter, namely, in water. This very quickly injures the flavour of it. It should be kept in a cool, airy place, but perfectly dry. When butter is made up in small fancy shapes, and kept for two or three days in water, the flavour is affected, and the butter more or less injured.

In sampling butter the novice should take care in withdrawing the auger or sampler, to keep turning it round on its axis.

The most approved packages for butter are made of white Danish beech-wood, purified so as not to colour or flavour the contents. Frequent complaints are made of mould in imported butters. Mould is very infectious, of rapid growth, and not easily eradicated. It often arises from mouldy cellars or warehouses or other close stuffy places. Butter should be stored in dry and airy situations. Some attribute the mould largely to the inferior grease-proof paper often used for lining the packages or wrapping the butter. The following precautions are recommended:—(*a*) The removal of mould or mould germs from the casks by their being scoured, brushed, and rinsed in water to which soda or salt has been added. (*b*) The destruction of possibly existing organisms by steaming the casks with hot steam for five to ten minutes. (*c*) Soaking the paper in a strong solution of salt, or steaming it (for this purpose place it folded on the bottom of cask before steaming). (*d*) Protecting the casks inside, the paper, and butter from germs which might fall upon them from the air or the clothes of the person handling them. (*e*) Using as tight casks as possible, and packing the butter as carefully and firmly as possible, avoiding empty spaces. (*f*) Lining the casks in the warm season with thick parchment paper (No. 2, 3, or 4), or using two layers of paper—for instance, No. 4 outside and No. 7 nearest the butter. (*g*) Rubbing the inside of the cask with salt immediately before placing the butter in it (the salt should previously have been

placed on a hot stove for half an hour, and should be kept in closed stone or glass jars). (*h*) The casks with butter should be kept in as cool and dry a cellar as possible—in cellar for choice with a temperature of 4 to 5 degrees centigrade.

Special Firms.—Geo. Wall & Co., Ltd., 14 to 26 Williamson Street, Liverpool; established over thirty-five years; receivers of the finest selected Danish butter; this firm now has also the selling of the butters from some twenty creameries situated in the richest butter districts of Ireland (see advt., p. 10). Henry Bird, 15 Farringdon Road, London, E.C. John Hayes (butter exporter), Tralee, Ireland. W. A. McKnight (Canadian and States), 24 Mathew Street, Liverpool. J. J. Metcalf & Co., 45 Whitechapel, and 21, 23, and 25 Sir Thomas Street, Liverpool. Morris & Jones, 13, 15, and 17 Sir Thomas Street, Liverpool. R. Rutherford & Co. (all kinds), 112 Whitechapel, Liverpool. Thomas Wilson & Co. (Danish and Irish), 3 Hood Street, Liverpool.

Butter Beans.—A variety known as the *Haricot Beurre*, or butter haricot, so called from its light yellow pod, is boiled whole and then fried in melted butter or oil, forming a very delicious adjunct to the dinner table. This long-neglected variety has of late become materially popularised, and is now being largely cultivated. Large quantities are grown in Peru, and hence often called *Lima Beans*.

Butter Colourings.—Formerly the juice from grated carrots was mixed with the cream, but the large quantity necessary tended towards early deterioration of the butter.

A substitute was next found in paste annatto, an article obtained in the West Indies and South America by the fermentation of the seed of annatto.

Between 1860 and 1870 commercial butter colourings were introduced, and alkaline solutions obtained from annatto were used both for butter and cheese. These coloured the butter-milk as well as the butter-fat, but latterly vegetable oil has been used more extensively for butter colouring.

This is entirely absorbed by the butter-fat, leaving the butter-milk uncoloured.

If the oil used be pure, and one that does not easily get rancid, the colour is absolutely harmless. Many butter colourings consist of a mixture of about 40 per cent. of chrome yellow with some fat coloured with annatto, while competition has led some manufacturers of these colours to make their preparations stronger and stronger, overloading the oil with more colouring matter than it can hold in solution when exposed to various temperatures, age, etc., and these have a tendency to separate to some extent unless the bottle is well shaken before using.

In France also annatto (*roucou*) is used for this purpose. It is imported in the form of paste from Cayenne and the West Indies, and then mixed with olive oil and saffron to the shade desired.

Butterine.—A conventional name applied a few years ago to the artificial butter made by churning oleomargarine (a product of animal fat) with milk, water, etc., but on the "Margarine Act" (1887) coming into force all such substances sold in the British Isles were ordered to be labelled *Margarine*.

Butter-Milk.—F. *Babeurre*; Per. *Dook*; Port. *Soro*; Sp. *Suero*; W. *Llaeth enwyn*.

The liquid that remains in the churn after the butter is removed.

Its average composition when fresh is 90·62 per cent. of water, 3·78 casein, 1·25 fat, 3·38 milk sugar, ·32 lactic acid, and ·65 of ash.

The lactic acid increases with age. It is never fat-free, and really contains all the constituents of milk; but a great portion of the sugar has been changed into lactic acid. It often contains much of the salt added to preserve the butter.

Being exceedingly wholesome and nutritious, it is often taken with fruit, puddings, cakes, mashed potatoes, etc.; and is said to allay the nervous irritability caused by excessive tea-drinking. It is also good for rickets, diabetes, and many stomach affections, and some say it induces longevity.

Separated milk must not be sold as butter-milk.

Butter Nuts. — (Botanical name: *Caryócar.* Synonyms:—*Pekea,* and *Rhizobolus.*)—The fruit of a North American species of white walnut tree, *Júglans cinerea,* so called from the oil the nuts contain.

Butter-nuts are of oblong shape, about two inches in length, round at the base, sharp at the point, and viscous.

The kernel is sweet and pleasant to the taste when fresh, but contains so much oil that it soon goes rancid.

Butter of Mace.—See *Mace Essence.*

Butter Powders.—These generally consist of bicarbonate of soda coloured with either a little turmeric or annatto. (See *Butter Colourings.*)

Butter Scotch.—A very nice butter scotch may be made as follows:—

Take 1lb. of the very best of butter, put it into a clean white pan or basin, and melt it down, stirring steadily with a wooden spatula; then add to it 4lbs. of best sugar; continue to stir and boil it to the *crack,* then pour it, about a quarter of an inch thick, upon a marble slab that has been previously rubbed over with olive oil or butter, or it may be poured into greased tins. When it has sufficiently cooled, cut or mark it into tablets. It may be flavoured with lemon or vanilla whilst boiling, or it may be left plain, as you please, but it is best to add the lemon late as possible, so long as it will incorporate with the sugar. Some add a little ginger, in which case the ginger is boiled in with the sugar.

Butter Soap or **Sapo butyricus.**—Soap made of soda and butter.

Byrrh.—A tonic wine or liqueur not unlike Quinine Wine. It is a combination of quinine with the red wines of Collioure, Banyuls, or Malaga, and fortified with alcohol. First made about 1873, and is now a speciality with Violet Freres, Thuir, Pyrenees-Orientales.

C

Caamina.—This is a name given by the Spaniards and others to the finest sort of *Paraguayan tea.* The shrub grows wild and is used in Chili, Peru, and other South American countries as tea is with us.

Caasnini and **Caanana.**—See *Maté.*

Cabbages. — F. *Choux;* Port. *Couves.* (See also *Cauliflower, Red Cabbage, Brussels Sprouts, Sour Crout,* etc.)

Broccoli, Cabbage, Cauliflower, Kohl, Brussels Sprouts, etc., have all been cultivated from one or more species of Brassica, and chiefly the Common Cabbage, *B. oleracea,* a native of the rocky parts of the sea-shores of England and Scotland, and which is said to possess in its wild state a most nauseous taste. They will grow in almost any soil, but prefer a light stony one.

Cabbages have been in cultivation for ages, and the original plant has given rise to several very curious races of esculents. In the Channel Islands, by picking off the lower leaves, the stem is made to grow to a height of 12 feet or more, and is used for walking sticks. Borecole, or Cow-cabbage, are forms with loosely-arranged, enlarged, and fleshy leaves termed *forma acephala.* Those in which the leaves are in a more compact and rounded head, including the *Red* Cabbage and the *White* Cabbage, are said to be *formæ capitatæ;* and those in which the disc of the leaf is increased, so that its surface rises into little hollow projections (*forma bullata*), are Savoys or Curled Kale. A number of small leaf-buds on the stem (*forma gemmifera*) constitutes Brussels Sprouts; and an abnormally enlarged, branched, and fleshy flower-stalk with abortive flowers (*forma Botrytis*) is the Broccoli and Cauliflower form.

In one variety or another they are in season all the year round. They are more nutritious, especially cauliflowers, than any other vegetables, unless it be

mushrooms. The dried leaf usually contains 30 to 40 per cent. of gluten, which in potatoes, for instance, is nearly absent, and dry cauliflowers contain even 50 to 60 per cent. Boiled and eaten in conjunction with potatoes and pork fat, cabbages are really an excellent and valuable food. They should be chosen crisp, firm, and with large hearts.

The small Savoy is usually in good condition from May to August, while Brussels sprouts are seasonable all through the year.

Cabrillion.—A French name for the small cheese made around Auvergne and Lyons from goats' milk.

Cacao. — See *Cocoas*, *Raw* and *Manufactured*.

Cacao Butter. — F. *Beurre de Cacao;* G. *Kakaobutter;* It. *Burro di Cacao;* Lat. *Oleum theobromæ;* Sp. *Manteca de Cacao.* (See also Cocoa-nut oil, *Mafurra Tallow*, etc.)

This is commonly called Cocoa Butter, but is quite different to Cocoa-nut Oil or Butter, so it is here spelt Cacao for the sake of identity.

Cacao butter, that is *Oleum Cacao Concretum*, *Oleum Theobroma*, *Butyrum Cacao*, as the chemists variously call it, is a white or yellowish concrete oil or fat obtained sometimes by heating and grinding the seeds or beans of theobroma cocoa into a liquid state, when the oil or fat rises to the surface, and on cooling sets or cakes in the form of butter or tallow, but of firmer consistency. Sometimes suspended in bags to filter through in the ordinary way. More often, it is extracted by powerful hydraulic pressure, the beans being gently heated over a fire, then decorticated, and placed between hot iron plates; but quite recently a German firm brought out a patent process for the thorough extraction of cocoa butter without the aid of pressure. The method is somewhat similar to that adopted in the orthodox Turkish bath, for the oleaginous matter is literally sweated out of the cocoa. The apparatus is circular in form, and first lined with felt, then with calico or linen. The cocoa is put in in small quantities, so as to gradually coat the lining whenever a rotary motion is imparted. The speed is increased very considerably, and then very hot air is introduced. The cocoa powder resultant is the very driest of powder, and virtually all the butter is extracted. In some cases the extraction of the fat while in paste form is assisted by the addition of water.

Cacao butter has an odour resembling that of chocolate and an agreeable, bland taste. In fact, the essential oil is the fat, and, if this be completely extracted, the true flavour is lost to the cocoa drinker!

Pure roasted cocoa deprived of its husk consists of about 50 per cent. of this "butter." It has a special characteristic in that it never turns rancid, however long it be kept. When fresh it is yellowish, but becomes white on continued exposure to the air, and melts at 85° to 95° F. Mostly used in making the white creamy inside of "*Chocolate Creams*," also for ointments and other pharmaceutical preparations, as well as perfumery; and a little is professedly used in making some of the cocoa butter soaps, but very few of these soaps contain any of this rather expensive ingredient. Cacao butter, although a purely vegetable product, is often adulterated with tallow, lard, cokernut oil, sesame oil, tallow, white wax, stearic acid, etc. But in the genuine article we have a sweet vegetable fat, suitable not only for the scrupulous Hindoo, who will not use animal fat, and the prejudiced Mahommedan, who avoids the use of hog's lard, but also for the fast days of the Roman Catholic. Wholesale, in tablets or blocks, from 1/- to 1/4 per lb.

Besides what is obtained as a by-product in the manufacture of thin cocoas, cocoa essences, etc., in this country, a considerable amount is now imported, and especially from Holland, which sends about 900 tons a year in 2 cwt. cases. Until 1896, it was imported duty free, but, being now classed as a cocoa product, the duty of 1d. per lb. is levied upon it. Cheap stearine from Denmark has recently come into competition with cacao butter.

Cachous or Breath Perfumers.—F. *Cachou;* G. *Kaschu;* It. *Cacciu;* Sp. *Cachunde.*

A sweetmeat or small lozenge, often made round like a pill, and composed of extract of liquorice, cashew nuts, with gum, etc. Intended for smokers and others, for sweetening the breath.

Cacio Cavallo.—This is the name of the typical cheese of Southern Italy, also made to some extent in Lombardy. It is very palatable and nutritious, and considered a great delicacy. Made from sheep's milk. The inferior sorts sometimes have an obnoxious odour of the sheep. The chief centres of its production are Asso Romano, Albruzzi Puglie, and Calabria.

Caerphilly Cheese.—This is the cheese *par excellence* of Wales, and is produced around the little market-town of that name in Glamorganshire, where a market for it has been in existence from a period beyond memory. It is not much known elsewhere, but is as popular in every Welsh county as Cheddar is throughout England.

It is claimed for it that, owing to climatic influence, combined with suitable herbage and the formation of the soil, this unique cheese can only be produced in the above district and a certain part of Monmouthshire, west of the River Usk.

The great variation which, however, exists among these cheese and even in cheese from the same farm is a great drawback to its sale. The Caerphilly authorities some time ago resolved that every cheese passing through their market should be branded, but much is still sold in distant places as "Caerphilly," which is not made there but in Somerset and Gloucestershire.

Cafe Noir Biscuits. — Square shape, length 3 by 2 inches, and nearly ¼ of an inch thick; about 32 to the lb. It is highly baked. The upper-side is pricked, and the material similar to Osborne or Oswego, while the under-side has a coating of hard and smooth brown icing. The whole biscuit is strongly flavoured with vanilla.

Caffeine. — F. *Caféine;* G. *Kaffein;* It. and Sp. *Cafeina.*

The active principle in coffee and an alkaloid identical with *theine* (which see), but obtainable from coffee. It is white, bitter, and crystallisable, and was first discovered or isolated in 1820 by Runge, Pelletier, and others. It is also present in tea, cocoa, guarana, coca, kola, yerba mate, etc. It possesses highly stimulating qualities, but its effect is not followed like that of alcohol by depression, and it renders coffee a valuable antidote to nicotine (tobacco poison). It is a very powerful drug, and is frequently used to relieve headache; it stimulates the heart, and increases the amount of urine passed. Used in excess, caffeine causes palpitation of the heart, muscular twitchings, general nervousness, and diarrhœa.

Pure caffeine is quoted by many wholesale druggists at about 14s. per lb., but it is very doubtful whether it is a genuine extract from coffee. Ordinary coffee contains about 1 per cent, Java 4·25 per cent., and Martinique 6·25 of caffeine. America is the greatest consumer of caffeine, it being used there in one or two important specialities.

Cagliari Paste.—This is of various shapes, similar to maccaroni, vermicelli, etc., Cagliari being the name of a province, and also the capital of Sardinia, celebrated for its hard, dry wheat.

Caju-nuts.—See *Cashew-nuts.*

Cake Powder.—See the *Easteleine Company's* adv., near end of book.

Cakes. —See *Slab Cakes.*

Calabar Beans. — The seeds of *Physostigma venenosum*, imported from the Calabar coast of West Africa. These ordeal beans are highly poisonous.

Calabash. —F. *Calebasse;* Port. and Sp. *Calabaza.*

These gourds are of two kinds, viz., the long, or Ceylon, and the round. The East African Calabash is full of bright orange-coloured seeds, about the size of a shilling when ripe, and at that time covered with a thick glutinous coat. They are excellent vegetables

when young, and when dried are utilised as basins, baskets, and other vessels. In Spain they are commonly employed for carrying wine.

Calcavalla or **Calcavellos.**—Port. *Carcavellos.*

A highly-flavoured and sweet white wine from Portugal; also manufactured as a British wine in imitation of the above.

Calcium Soap. — A soap made either directly by saponifying fat with hydrate of lime, or by treating soluble soap with a solution of a salt of lime. Used chiefly in the manufacture of stearin wax.

Calcutta Howrah.—See *Chutneys.*

Calf Meal.—Various mixtures are made up under this name. The following have been prepared for many years by one of the largest spice houses:—(1) 46lbs. ground lentils, 40lbs. fine locust meal, 10lbs. linseed meal, 6lbs. ground liquorice, 2lbs. table salt. Somtimes a little turmeric is added to impart a yellow colour. All the ingredients must be finely ground and well mixed together. (2) 52lbs. fine locust meal, 28lbs. linseed meal, 28lbs. ground lentils, 2lbs. common salt, and 2lbs. ground fenugreek; total 112lbs.

Apply to Roger Errington, Victoria Mills, Sunderland.

Gardner's patent "Rapid" Sifter and Mixer, freely used for calf meals. Prices, from 50/- to £100. Catalogues from Wm. Gardner & Sons, engineers, Gloucester.

Calves' Feet Jelly. — (See also *Table Jellies.*)—Used to be made from calves' feet and flavoured with either Cognac, Madeira Wine, or Sherry, but seldom now except in private families. After calves' feet went out of use, neat's feet or cow heel, with parchment cuttings, calves' pates, etc., were used, but gelatine has since come into vogue, and is found very suitable for the purpose. Most of the Calves' Foot Jellies sold in bottles, even when prepared by first-class makers, are now made from gelatine. For a common jelly, soak one pound of gelatine for an hour in a gallon of water and then bring to a boil on a slow fire and strain.

Californian Fruits. — The most popular importations comprise Apricots, Plums, Greengages, Peaches, Pears, etc., which are graded as Extras, and Standard No. 1 or No. 2, according to quality. They arrive in 2½ to 3lb. tins, packed in cases of two dozen. An increasing quantity of evaporated or dried fruits now come from California, and there is every prospect of these becoming highly popular throughout the United Kingdom. Fresh Peaches and Apricots also come occasionally packed in light airy cases, but they do not keep good always. California also is noted for its oranges, the yield for the last season, December to June, 1900, being about 4½ million boxes. The orange industry is mainly confined to the southermost counties of the State, and only a small number reach England.

Californian Wines. — Wine production in California may really be said to be in its infancy, for, although a few inferior sorts have been made there over a hundred years, they were produced from the Old Mission grapes which were originally introduced by a body of Franciscan friars from Mexico, and these Mission grapes are heavy bearers, but make very poor wine. It was only in 1880 that the business began in earnest, when some 200,000 grape cuttings and rooted vines of the finest varieties were selected in Europe, Asia, Persia, and Egypt, and distributed throughout the State, the most noted sorts being the Hungarian *Zinfandel*, the French *Folle Blanche*, *Semillon*, *Cabernet Sauvignon*, *Cabernot Franc*, *Petit Pinot*, and the best of the Bordeaux, as well as the German *Riesling* or *Hock* vines.

The Californian soil and climate being perfect and reliable for vine growing—in fact, it has been proved that the soil in several parts of the State is quite equal to that of France, while the climate is far more reliable—they have succeeded beyond expectation. Instead

of an annual crop of some 5,000 up to 1880, the yield in 1893 was about twenty million gallons, and of excellent quality. In 1897 it was nearly 26 million gallons, viz., in Sonoma 9, Santa Clara 7¾, Napa 4½, and other counties 4½ million gallons. About one-third of the product is now consumed in California, and the rest either sent into the other States, New Orleans, New York, etc., or exported. Increasing quantities are now finding their way to England, many persons preferring them for their simple purity and wholesomeness. The best made up to the present time are the natural dry red and white varieties, such as those of the Claret, Burgundy, Sauterne, Hock, and Chablis types, which are grown on the coast range extending north and south of San Francisco.

Although made from the same varieties of grapes as in Europe, the wines are somewhat different. For instance, the White wines made from Riesling grapes, although resembling in many respects the German Hocks, have much less acidity and more body.

This is evidently because the grapes ripen in California, whereas in Germany they scarcely ever do so.

Sauterne types in California, very clear and soft, are chiefly made from the Semillon and Sauvignon-Blanc grapes, but have not the excessive sweetness of French Sauternes.

The counties of Los Angeles and Fresno, being warmer, are particularly suitable for Sherry, Port, and other sweet sorts. In car load lots, these wines, of good quality, can be bought at 1/6 to 1/8 per gallon.

There is obviously a great future for wine production in the "Golden State," and so far there have been no signs of phylloxera.

Calisayine Bitters. — (See also *Liqueurs* and *Medicated Wines.*)—A tonic liqueur or "bitters" prepared from Bolivian bark (*Cinchona calisaya*).

Calisaya (the native name for the bark in Peru and Bolivia) is, however, a rather dangerous and disguised intoxicant, and, although taken by men, women, and children as a tonic, constant indulgence is said to result in paresis, cirrhosis of the liver, diabetes, and death.

Calla-roots.—These are a new kind of American vegetable resembling potatoes, but longer, and consist of the roots of the *calla* lily. The interior is also a little more viscid than the ordinary Irish tuber, but when cut up there is very little difference. They are already grown extensively for market in the swampy lands of Florida and other parts of the United States, where flooded lands yield enormous crops. They reproduce themselves by the multiplication of their bulbs underground.

It is said the Egyptians have cultivated for centuries similar crops during the season of the Nile overflow, and that calla lily bulbs are a common vegetable also in Japanese markets, but it is only recently that the Western world has become alive to their palatableness and prolificness as an agricultural industry.

Callibogus.—An intoxicating drink used by fishermen of Newfoundland, Labrador, and the Gulf of St. Lawrence, consisting of a mixture of spruce, beer, and spirits.

Callipash and **Callipee.** — See *Turtle Meat.*

Cambric Tea. — A conventional name for a mixture of hot milk and water, given to children.

Cambridge Sausages (Royal).—These once famous sausages seem to have lost much of their celebrity. They were made formerly of two parts of meat to one part of bread, but now this is reversed. The old recipe was:—Chop well equal parts of lean pork and veal, say 1lb. of each, to this add 1lb. of fat, part pork and part veal, chop and beat well with a hard beater. Allow 1lb. of bread crumbs, a little parsley, thyme, two heads of leeks, or a little garlic or shalot, chopped very fine, 1 oz. of sage leaves, chopped very small, salt, pepper, and nutmeg. For each pound allow one egg, the yolk and white separately; beat both well; mix in the yolks and

enough of the whites to moisten the bread. Turn the skins inside out, stretch them on a stick, wash, and scrape them in several waters. When perfectly clean take them off the sticks, and soak in salt and water for two or three hours before filling.

A modern method:—To every 20lbs. of lean meat there is usually added 12lbs. of fat and 10lbs. ground rice, which has been boiled a quarter of an hour in a bag. The rice and meat are then chopped up together with the seasoning till quite fine. A good seasoning powder is made by mixing 4lbs. salt, 1½lbs. white pepper, 3 ozs. each of sage, nutmeg, and ginger, 1½ ozs. of mace, and ½ oz. cloves. About ½ oz. of seasoning is used for each pound of meat. Bread is sometimes used instead of rice, but rice keeps good the longest. *Sausage machines* save much time, noise, and labour in chopping.

Cambridgeshire Cheese.—A noted kind of soft or cream cheese.

Camel Corn.—See *Chick Peas.*

Camembert Cheese.—A small, flat, soft cheese of circular shape and pale yellow colour with a dark rind, originally made from whole or partially-skimmed milk, around the village of Camembert, in Normandy, France. Very fine, sweet, and delicate in flavour, and commands a high price at all seasons, but is very soft and soon perishes. They are now imitated in nearly every part of France, and also abroad, so that not one hundredth part of the cheese sold under that name are produced at Camembert; but there is a weekly market at Alencon, where the genuine are to be had.

Composition:—Water, 51·30; casein and albumen, 19·00; fat, 21·50; milk and sugar, 3·50; ash, 4·70. About £150,000 worth is made yearly, and it is considered one of the best soft cheeses made. It is ripe in about four weeks, but the flavour depends on the successful growth on the outside of the cheese of a fine pilose mould, which is first white, and then blue, the mycelium of which penetrates into the interior of the cheese, and causes a change in its body equivalent to ripening.

Camembert is undoubtedly one of the best and most saleable of the soft and fancy cheeses which have come so much into vogue during the last few years. About five gallons of good new milk will make a dozen cheeses, the curd being made at twice, half the milk being set in the morning and the other half in the evening. Temperature of milk 80° to 84° F. A sufficiency of rennet is used to cause a fairly firm coagulation in three hours—the rennet being exactly measured with a cubic centimetre pipette. Example—Take 25lbs. of warm, fresh morning milk, make it 82°, and set the milk in wooden tubs so as to conserve the heat. Add two cubic centimetres of Hansen's rennet, mixed with a little water, and stir occasionally during the first half hour. In three hours the curd will be ready to ladle out into the moulds, which are perforated tin cylinders five inches high and as many broad. These moulds are placed on straw mats, which assist drainage, and give the cheese a nice surface. In *ladling* out, do not break or mash the curd, or loss of fat will result.

In the evening repeat the process with fresh milk, except that perhaps a little more rennet will be necessary, the evening's milk being richer. By the time the evening's curd is ready the other will have sunk, and left room for it to be filled in, having first broken the top of the morning's curd so as to let the two curds join. By the evening of the second day the cheeses will have settled, and be firm enough to turn out on to fresh mats, where they are slightly salted on the upper surface, and left for twelve hours, being then turned and salted on the other surface and sides, and the moulds removed. The cheeses remain in the making-room four days, when they are placed on shelves covered with straw, in a room where they can get currents of air so as to ensure partial drying. They here remain a week, and become covered with a fine white fungus or mould peculiar to Camembert, and then a blue mould.

They are then ready to be removed to the cellar or cave for perfect ripening. This cellar should be cool (about 50° F.) and dark, with very little ventilation and a fairly moist air, and provided with shelves covered with straw, on which the cheeses are placed. Turning is done each day, and in the course of three or four weeks they will be ripe, which condition is known by their assuming a reddish tint, and the body of the cheese on pressing being soft and yielding. A ripe Camembert weighs about 11 ozs. They are sent to market in light, wooden, round boxes, one cheese in each box, or sometimes in packages of six, wrapped in straw, which keeps the cheeses in shape, also preventing dryness. They keep well in the original boxes. If they should get soft, they will harden on being exposed to the air, by removing the cover from the box and putting them in a cool place. If too hard, they can be made soft by putting them under a glass cover. If the wrappers become soiled, re-wrap them.

Camomile.—See *Chamomile.*

Camphor or **Camphire.** — F. *Camphre;* Du. and Sw. *Kamfer;* Da. and G. *Kampfer;* It. *Canfora;* Port. *Alcamphor;* Rus. *Kamfora;* Sp. *Alcanfor.*

The gum, or concrete volatile oil, of several kinds of laurel and bay trees of Eastern Asia, especially the *Cinnamomum Camphora*, or Camphor laurel, common in Formosa, Japan, India, and China, whence it mostly comes to Europe in small crumbly masses (like coarse raw sugar) or "Bells," and packed in chests, drums, and casks. The root, bark, leaves, and berries of the tree smell strongly of camphor. The wood is cut up into small pieces, 1½ to 2½ inches in size, which are boiled in water and steamed over a slow fire. The steam rises and wets the *straw lid* of the kettle, and when cool the crude camphor is found in the straw in small sand-like grains. Sometimes a bamboo pipe conveys the steam to vessels filled with cold water. After being refined by subliming it from quicklime in iron vessels it condenses, and is generally sold in thin hollow cakes, quite white, but if exposed to the air it totally evaporates. In the provinces of Tosa, Hiuga, and Satsuma, in the South of Japan, there are immense groves of these camphor trees, huge evergreens of singularly symmetrical proportions, and not unlike lindens, many of them owned by the Japanese Government, the wood being very desirable for ship-building. These gigantic trees are very pretty; about as hardy as citrus trees, vigorous, and long-lived. Some are 10 to 12, or even 15 feet in diameter, and upwards of 300 years old, and the law provides that for every tree cut down a young tree shall be planted in its stead. The roots contain a much larger proportion of camphor than the trees. The camphor and camphor oil are distilled by peasants who are very poor, and employ only the rudest machinery. The wood is boiled five or six times, and 320lbs. of wood usually yields about 6lbs. crude camphor. This camphor is exported from Tamsui in matted wooden tubs, measuring 6½ cubic feet and containing 133⅓lbs. each. The adulteration is generally water, sometimes oil. The quality known as *good old dry* is the best by reason of its greater purity, pinkish colour, and bold grain. The Japanese product fetches 2½ to 10 per cent. higher prices than the Formosan.

Very little information can be obtained from the Japanese regarding its manufacture, and the only foreigner known to have visited the camphor districts declined to give any details about it. The "independent" savages of that region, said to be of Malay origin, will only trade with the "Hakkas," or Chinese immigrants, and will not permit any others to approach their mountain fastnesses. Two or three American companies have, however, lately been organised for refining camphor in Japan. Although the camphor laurel is very common in China, very little is manufactured there. In the island of Formosa, where camphor has recently been made a Government monopoly

here are several immensely wooded districts, and there is little fear of the supply being soon exhausted. The inhabitants, however, are aboriginal barbarians, and apt to make dangerous outbreaks. A large quantity of Formosa camphor and some from Amoy comes to England by way of Hong Kong, but it contains a great deal of oil and moisture, and cannot be refined to the proper hardness without adding Japan camphor to it. To make it fit for exportation requires much work, diligence, and experience. The crude article is brought by the natives to the market in very rude wooden tubs. Each tub is carefully sampled, vertically and diagonally, and the samples are tested by fire, and sometimes by alcohol. The rest is easy, and consists in weighing, cutting, mixing, and packing for shipment.

In Formosa no trees under 50 years old are used, and in Japan none under a century.

Camphor is not now much used in making smokeless powder, on account of certain practical disadvantages discovered. It is, however, used in continually increasing quantities for the conversion of collodion cotton into celluloid, which is applied to the manufacture of imitation ivory, tortoise-shell, horn, and a great variety of purposes. As an adulterant, a substitution of Borneo is sometimes made. This latter, a stearoptene, known as *Borneol*, $C_{10}H_{18}O$, is imported in liquid form, but is a product of *Dryobalonops aromatica*, and so is the hard camphor of Sumatra. Camphor is very bad for painting other goods. Imported in the form of tablets and bells in casks of about 5 cwts. each. The price is now four times what it was 20 years ago. Annual imports about 100 tons of refined and 600 tons of unrefined.

Camphor Balls, Squares or **Cakes** —Also called *Chap Balls*, *Chilblain Balls*, etc.

These are mainly used to anoint the hands after washing, to prevent "chapping" and chilblains, or as a scent. How prepared: (1) 3 dr. white wax, 3 dr. spermaceti, ½ oz. almond or olive oil, and 2 dr. powdered camphor. Colour if desired with alkanet root and stir till partly cold. (2) 1 oz. lard, 1 oz. white wax, and 1 dr. of camphor.

Camphor Soap. — Formulæ: — Soap 1,500 parts, oil 40, essence of lavender 5, camphor 60, cocoanut oil 1,000, caustic soda at 40° B 500. When saponification is complete add alcohol 100, water 50, and camphor 75.

Camphor Tea.—A solution made by pouring boiling water on a lump of camphor.

Camphorated Chalk.—Used chiefly as a tooth-powder, and prepared by mixing 6, 10, or 15 parts of precipitated chalk with one part of powdered camphor. The lump camphor should first be broken up, a small quantity of rectified spirit added, then reduced to a fine powder, and lastly passed through a fine sieve. Prepared chalk often used in lieu of the precipitated. It is less clean and velvety, but cleans the teeth better.

Camphorated Oil. — According to the Brit. Pharm., this should contain not less than 21 per cent. of camphor and 71 per cent. of pure olive oil; or 1 oz. of camphor dissolved in 4 fluid ounces of olive oil. Camphor evaporates very rapidly, and if exposed, or the bottles be opened frequently, the retailer may be fined for selling it under its proper strength. Olive oil should be used in preparing it and not cotton seed oil, the latter being very inferior in its healing properties. Liquid paraffin is, however, an admirable solvent for camphor, and the solution has the advantage over the usual camphorated oil of becoming perfectly limpid with a little heat. Nevertheless, if the camphorated oil be found deficient in camphor or olive oil, the seller is finable. It should also be remembered that in store bottles the camphor is liable to settle, and so leave the upper stratum of oil deficient.

Camp Ketchup. — How to make: —Heat to boiling point ½ gallon old beer, 1 quart sherry, ¼lb. anchovies, then add ¼lb. crushed shalots, and ½ oz. each of ground ginger, nutmeg,

mace, and pepper; put into a stone jar and shake it once every day for a fortnight, then allow it to settle, and bottle.

Camwal. — The initials of the Chemists' Aerated Mineral Water Association, Limited, which professes to supply chemists only who are shareholders.

The *Idris Co.* is another limited concern professedly supplying only chemists, hotels, clubs, etc., at wholesale prices.

Canadian Balsam. — A kind of turpentine or liquid oleo-resin obtained from *Pinus balsamea*, used for mounting microscopical objects.

Canadian Produce. — The staple foods received into this country from Canada are Cereals, such as wheat, barley, oats, flour, etc.; animals (living), dressed meats, cheese, butter, eggs, fish, fruit, lard, condensed milk, potatoes, poultry, and game; but of the total annual imports of such products from all countries (about £120,000,000) Canada, so far, sends only about 7 per cent., whereas she can easily supply 30 or 40 per cent.

The Canadian climate, fertile soil, and her intelligent, cleanly, and industrious people are most favourably adapted for yielding the very highest qualities.

Products from that pure and healthy northern atmosphere seem to have better keeping qualities, richer flavour, and a higher percentage of nutritiveness than those grown further to the south, so that their importations may be expected to increase rapidly.

The wheat, flour, and cheese are not injured in quality by being carried at the ordinary temperatures of the atmosphere. Indeed, Canadian No. 1 hard wheat and flour from the sun-kissed prairies of Manitoba and the North West are unsurpassed by those from any other part of the globe. Butter, dressed meats, fruits, eggs, poultry, and a few other articles require to be carried in cold storage to protect them; but to help the Canadian farmers and settlers to obtain a foremost place in the British markets, the Canadian Government has provided what is practically a complete chain of cold storage service from the producer along the railways and steam ships to the ports of Great Britain. It has arranged and subsidised not only trains and ships, but also cold storage buildings at the ports of export, to be maintained until the trade can take care of itself. It has also encouraged creamery owners to erect cold storage rooms, by allowing a bonus of £20 to each of those used and kept at a satisfactory temperature.

Canadian Apples.—Are referred to under *American Apples*. The grading, packing, and handling in Canada is capable of improvement. There seems to be a difference of opinion there in defining standards—Ontario, for instance, contending for size as indicative of No. 1 A; while Nova Scotia, whose apples are among the best will not agree. There is also too much dishonest packing, *i.e.*, "topping," or placing the finest apples at the top and the inferior below. The Nova Scotian Standard for apple-barrels is 150 quarts, dry measure.

Canadian Bacon. — The development of the pork-packing industry bids fair to surpass that of the United States. The fact that Canada's exportation of bacon, hams, and lard has grown from $870,313 in 1890 to $5,860,584 in 1897 is sufficient of itself to attract consideration. There is now a regular and active demand on the British markets for this superior class of products. The chief factories are at Toronto, Hamilton, Bowmanville, Palmerston, Brockville, and other points of Ontario, Quebec, Winnipeg, and Vancouver, but over three-fourths of the exports are from Toronto. The so-called pea-fed bacon and hams from the Ontario packing houses are now recognised as fully equal, if not superior, to the best Danish, but the term "pea-fed" does not necessarily mean that the hogs were fed on pea-meal.

Canadian Butter.—The Dominion Government, moreover, undertakes the

management of some creameries in the north-west territories, making and marketing the butter, etc., and lends to settlers in these districts, who have formed joint-stock companies, sums of money sufficient to provide the necessary machinery.

Canadian butter comes to England either in boxes or 70lb. tubs, and is mostly made between November and April from "stall-fed" cows, the grass milk being preferable for cheese-making.

The expansion in the Canadian export butter trade was even more remarkable this year (1899) than last, the increase in quantity being almost 50 per cent., while the increased returns to the producer are also nearly 25 per cent. more than they were last year. In round figures, 451,050 packages of Canadian butter were shipped to England in 1899, and the price has averaged $1 per package more than in 1898. Taking this as the basis, the revenue from butter was $5,998,000, an increase of $2,000,000 odd, as against a gain last year of only $610,000. This is certainly a most remarkable showing. The range each month throughout the year was higher than 1898. The highest price of the season was paid in September, when 24c was realised. One has to go back to the year 1894 before coming across a similar figure, and then it was not in the fall, but on stock that had been carried through the winter months, which, of course, made its cost all the more. The low level was during June and July, when 17½c. was the price. In May the price averaged 1½c. more than in May, 1898, in June 1c., in July 1¾c., and in August and September 3c. per pound above the same months in 1898. In October the difference was only 1½c., and in November it had fallen to 1c. per pound.

Bristol still continued to be the leading customer, but Liverpool this season took second place from London, as destination for Canadian butter. The ports stand in the following order:—Bristol, 158,210 packages; Liverpool, 105,864; London, 105,135; Glasgow, 13,847; Newcastle, 7,400; Aberdeen, 741; Leith, 406; Antwerp, 204; Manchester, 29,242—total, 451,050 packages.

The laws of Canada prohibit the manufacture and sale of oleo-margarine, butterine, and imitation or 'filled' cheese (margarine-cheese).

Canadian Cheese.—Not less than 60 per cent. of the whole of the cheese imported into this country now comes from Canadian ports; but it is said some of it is really made in New York State and Wisconsin. "French" grades are also often rebranded and sold as fine grades of Canadian, masquerading as "*Perth Gems.*" Sometimes American cheese, sent forward unbranded, is afterwards branded "*Canadian*" or "*Ingersoll*," with false names of shippers or factory, so that the branders cannot be traced.

There has been much legislation to uphold the standard of Canadian goods. In 1893 an Act was passed preventing the making of filled cheese, prohibiting, under pain of a fine, the fraudulent branding of the word "Canada" on cheese not made in the Dominion, and providing that the name of the country from which cheese came into Canada should be plainly marked on the package. In 1897 an Act was passed to provide for the registration of cheese factories and creameries and make the branding of the word "Canada" or "Canadian" on all cheese and butter intended for export compulsory. The branding of the date of manufacture was not rendered compulsory, but any misrepresentation on the subject by means of marking packages was rendered punishable. The registration of factories and creameries is provided for, and the product of each can, in consequence, be identified. Still, August cheese is often sold as September make.

These things destroy confidence in the article, as also does the practice of selling Autumn-made cheese, but delivering earlier makes of non-keeping quality out of cold storage.

Canadian cheese is nearly all shipped from Montreal, where there are about half-a-dozen large merchants, or agents, of Europeans firms. These agents have

other sub-agents buying for them in Ontario and Quebec. Most of the real Canadian cheese is made in Ontario. The best is made in Perth, and the best autumn makes have lately been beating our best English in price and quality.

There are 1,123 cheese factories in Ontario. About 75 per cent. of these are east of Toronto. The following counties have the greatest numbers:— Hastings, 96; Frontenac, 72; Leeds, 65; Prescott, 63; Dundas, 55; Carleton, 53; Glengarry, 48; Oxford, 45; Russell, 44; Lanark, 43; Stormont, 43; Northumberland, 43; Grenville, 40; Middlesex, 39.

The curing occupies only about three months, and the manufacture is carried on from April till November, but the quality produced during these two months and the intervening winter season are from "fodder-fed" cattle, and so much inferior to the summer and autumn grass makes, that factory-men are discontinuing their manufacture.

The freight and other transportation charges to English ports only add about 6 per cent. to the cost. The boxes, however, are often badly made, and of green, instead of well-seasoned, wood. The cheese-making industry in Prince Edward Island is showing remarkable development, and large shipments are being made to England from Charlottetown.

Canadian Eggs. — These are of uniformly large size, carefully selected, and arrive in good condition, as to freshness, cleanness, fulness, and central position of the yolk. The Canadian egg case, with its cardboard compartments, is greatly preferred by many to the egg cases from other countries, and the exports from Canada nearly all come to Great Britain. In 1896 we received over 5½ million dozens and in 1898 over 10¼ million dozens.

Canadian Poultry is also an important branch of business. (See *Turkeys.*)

Special Importers from Canada:— W. A. McKnight (cheese, butter, and eggs), 24 Mathew Street, Liverpool; R. Rutherford & Co. (bacon and butter), 3 Hood Street, Liverpool.

Canadian Tea. — A decoction made from the leaves of *Gaultheria procumbens.* (See also *Tea Berry* or *Mountain Tea.*)

Cananga Oil. — This is the name applied to a perfumery oil resembling that of Ylang Ylang. It is distilled from the flowers of *Cananga odorata*, indigenous to Burmah, and cultivated in many parts of the Eastern Archipelago. The oil is largely exported from Java, and the best from Manila. It has a specific gravity of from 0·910 to 0·920. Price about 18/- per lb.

Canary-seed. — Da. *Canarifröe;* Du. *Kanaryzaad;* F. *Alpiste* or *Grain de Canari;* G. *Kanariensamen;* It. *Sema di Canario;* Sp. *Alpiste.*

The small white or reddish seed of canary grass, *Phalaris canariensis*, a native of the Canary Islands, used chiefly for feeding birds, but occasionally employed in some countries in the preparation of human foods. Large quantities are imported into England from Holland and Germany. English canary-seed is mostly grown in Kent and Isle of Thanet. A quarter of English seed weighs 448lbs., foreign about 464lbs. Some 500 or 600 tons of canary-seed are sold in England yearly, and entirely for the purpose of feeding cage-birds. New crop due about 1st September.

Special Firms.—Hedley, Gamble, & Crosfield (cleaners), Circus Street, Liverpool; Morris & Jones (merchants), 13, 15, and 17 Sir Thomas Street, Liverpool.

Wm. Gardner & Sons, engineers, Gloucester, make machines specially suitable for treating above. Catalogues free.

Canary Tea. — Obtained from the plant *Sida canariensis.*

Canary Wines. — These comprise the cheap Sack and Port wines made in the Canary Isles (Spanish). The favourite kind is *Teneriffe* or *Vidonia*, a dry wine of good body, produced at the vineyards around Las Palmas,

Grand Canary. Some say the best vineyards are at Orotava, S. Ursula, Ycod de los Vinos, Buenavista, and Valle de Guerra.

Malvoisie is made from a very sweet kind of grape called *Cabosa*, and special to the Islands of Canary and Madeira.

Canary *Sack* is a white variety of full flavour, almost similar to Madeira (Portuguese), and like Canary Port is usually retailed in England at about 1/- a bottle.

The Malmsey of Teneriffe is also an excellent product, but rather acid.

Candied Fruits.—See *Crystallised Fruits.*

Candied Peels.—(See also *Citrons, Lemon Peel*, etc.)—Candied peels are in England generally prepared as follows:—The Bitter, Seville, or Bigarade oranges, the lemons or the citrons, are cut in two halves and each pressed by hand flat side down on the top of a revolving knob of wood, a trifle smaller than the fruit, to clear out the pulp, pips, and ligatures, which fall into a trough. This pulp is largely used in Marmalade manufacture. The peels, after being soaked some few days, weeks, or months in salt water, are washed in clear water, then boiled in water until soft and until the salt is got out. They are afterwards boiled several times in syrups of sugar. This last process occupies about a week, for the peel must be boiled in very thin syrup, then got to absorb thicker solutions, until the peel assumes a swollen transparency. They are finally half filled with thick syrup, and dried at a gentle heat on trays.

Leghorn is the chief seat of the industry in Italy, citrons, oranges, lemons, etc., being received for this purpose from Corsica, Sicily, Calabria, and other southern provinces of Italy, also from Tunis, Tripoli, and even Morocco. The sugar is imported from Egypt. The wood for the boxes in which the peel is packed goes from Trieste. The fruits are sent halved and packed in hogsheads in fairly strong brine, so as to ensure thorough preservation of the rind, by an equal saturation of the interior, as well as exterior, face.

Women with the fore-finger and thumb quickly gouge out the insides, and throwing this aside place the rind unbroken in a vessel alongside them.

The rind is next carried to large casks filled with fresh cold water, in which it is immersed for two or three days to rid it of the salt it has absorbed.

The rinds are then boiled one or two hours in a large copper cauldron to make them tender, also to ensure the extraction of any remaining salt.

The fruit next undergoes a saturation for about eight days in large jars with syrups of various strengths. This causes the slight fermentation desired. After this the peel is boiled and stirred for about an hour in still stronger syrup, of a density of 40 degrees, in large copper vessels over a slow coke fire. The contents are then poured over a large wooden trough, over which is coarse open wire netting. The peel is distributed over the surface of the netting, so that the syrup, now thick as treacle, may drain into the trough below. The peel having now taken up as much sugar as necessary, a quantity of crystallised sugar is dissolved in a little water, and into this the now dried peel is immersed, and the whole again boiled over a slow fire, until the little water is driven off; and the sugar upon cooling will form its natural crystals over the surface of the fruit. The peel after being finally dried on the wire netting is now complete and ready for packing in 7lb. boxes. Thus the great bulk of candied peels have until lately been prepared in Italy—particularly at Leghorn, Palermo, and Messina; but there appears no reason why they should not be wholly manufactured in this country, where sugar is cheaper and mechanical enterprise greater. Indeed, many of our manufacturing confectioners and jam-makers now cure and turn out big lots, thousands of hogsheads of fruit in brine coming from Bastia and other ports to England for that purpose. It seems, however, that during the last year or two an emasculated article has found its

way into the shops. It is known in the trade as *Candied Skins*, from which all or most of the essential oil has been extracted before candying. It is only 2/- or 3/- per cwt. lower in price than the genuine, and even looks brighter and more attractive, but it is really very deficient in flavour, and may be detected by the taste.

For the genuine article, apply to Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool.

Candied Sugar.—See *Dutch Candy*.

Candies.—An American term for Sweets or Boiled Sugars.

Candle-nuts.—The kernels of the candle-nut tree, *Aleurites moluccana*, which grows on most of the Pacific Islands, also in Central America. These kernels are very rich in oil or fat, and the natives commonly thread several of them on the mid-rib of a palm leaf or reed or stick of wood. When lighted they become fair substitutes for candles. They are so used by the San Blas Indians in Central America, and a child usually has the duty of knocking off each nut as it burns out. In Tahiti and Fiji the tree is called *Futui*, and *Doodoe* is its title in Pitcairn's Island. These nuts are similary used as candles in the Hawaiian Islands.

Candles. — Du. *Kaarzen;* F. *Bougies* or *Chandelles;* G. *Lichteren* or *Kerzen;* It. *Candeles;* Sp. *Bujias;* Port. *Velas;* W. *Canwyllaw*. (See also *Dip*, *Mould*, and *Paraffin Candles*, *Rushlights*, *Ozokerit*, etc.)

If ever there was a phase that distinctly marks the progress of man in civilisation, it is to be found in the methods which he has adopted from time to time for producing artificial light. He began with the rude torch, which served as a means of illumination as far back as we can trace in human history, and which, even in our day, is the accompaniment not only of the war dance of the veriest savages, but of the rejoicings, by processions and other celebrations, of the most highly cultivated youths of the universities.

Nor is the series just commenced as yet completed, for notwithstanding that the force of electricity has been pressed into our service as a substitute for sunlight, that very light itself has already been stored up on a small scale to produce a faint glimmer sufficient to distinguish printed characters for the hour of night in the sleeping apartment during the absence of the great luminary himself.

In the Isle of Man and a few other places there are districts where one of the oldest customs of people making their own candles still survives. The ironmongers sell the necessary utensil—a long candle-shaped tin tube, with a handle for holding. A home-made wick, constructed out of old fishing nets unravelled, or almost anything else, is passed through this tube, and all the fatty refuse that is not good enough for the pig is melted down and poured into it. Once cool, the candle is drawn out and its manufacturer lives light free.

Many brands of candles under a many different names have been brought into the market, but most of them vary only very little in composition. They are made from either tallow, wax, or spermaceti, or a mixture of these substances. Their value depends upon their clear burning, high melting point and light-giving properties, as well as on their handsome appearance, which in all cases should be as white and transparent as possible.

Exhaustive experiments have shown that the chief factors affecting the light which a candle gives are:—The number and size of the threads in the wick, the closeness of the plaiting of the strands, the pull on each strand during plaiting, the previous cleaning of the cotton used, the treatment of the wick by the manufacturer, and the extent to which the wick is stretched when set in the candle mould by the workman.

Various other conditions also affect the amount of light a candle affords, such as the length of time it has been burning, whether the "cup" of the candle is dry or contains melted sperm, the

ughness or smoothness of the wick, ie curvature of the wick, etc.

"Paraffin" candles are probably sold ow more extensively than any other.

Candles are usually either *dipped* or *oulded*. The former are generally mposed of coarser tallow.

"Mould" candles were first intro-uced by the Sieur De Brez, in the 15th ntury. The great faults of tallow ndles are that they "smoke," gutter," give off a bad smell, and they e easily bent with warmth. If we press llow, a liquid oil exudes, called *olein*, id it is this liquid olein which renders llow so soft, and which, by melting oner than the harder stearin, causes e candle to gutter and form columns slag wax.

Recent improvements in candle-aking have, however, been introduced, hich consist in not employing the hole of the fatty or oily substances, it in decomposing them and then using ily the *stearine* of the fat and the *almatine* of the oil.

Candles are, therefore, now chiefly mposed of stearic acid. It has a gher melting point than tallow, mely, 150° F, and the gases produced the destructive distillation of stearic id in the flame of the candle burn th a brighter flame than those pro-uced from tallow. The light of the me is due to the incandescence of rbon particles liberated by the decom-osition of the various hydrocarbons esent.

Wax cannot be formed into candles melting it and then running it into oulds, because of the tenacity with hich it adheres to the mould, and its eat contraction on cooling; but the cks properly cut and twisted are sus-nded by a ring over a cauldron of uid wax, which is poured on the tops the wicks until a sufficient thickness obtained, when the candles, still hot, e placed on a smooth walnut table, pt constantly wet, and rolled upon it means of a flat piece of boxwood or lled between marble slabs.

The large candles used in Romish churches are merely plates of wax bent round a wick and then rolled.

Candles improve by keeping a few months. Those made in winter are the best. The most economical, as well as the most convenient, plan is to purchase them by the box, keeping them always in a cool dry place.

The duty on candles was repealed in 1831 by Acts 1 and 2 William IV., cap. 19. The penalty for evasion of the duty was very severe.

Candle-power, in comparison with the electric light and the standard of light referred to in the phrase "*sixteen-candle gas*," are based on the average light afforded by an average sperm candle, burning at the rate of 120 gr. an hour.

Candle-wicks are usually composed of spun cotton plaited together, and the wick tends to bend naturally.

The wicks were a great source of trouble formerly, because the cotton wicks showed a great tendency to stand up above the body of the candle till they came in contact with the air.

One method to obviate the long wicks was to soak them in solution of nitre, so that they provided their own oxygen, but if the solution were slightly too strong, the wick disappeared in the fat, and the flame was extinguished.

Another method, invented by Messrs. Palmer, of London, was to have a thin bismuth wire running through the tip of the wick to bend and come in contact with the air.

For stearin and paraffin candles the wick is plaited over a braiding machine and dipped in a solution of boracic acid before using. It thus twists out of the flame, and is completely burnt away, so that snuffing is not required.

Coloured Candles.—Pigments have hitherto been used for colouring candles —such as vermilion, ultramarine, etc., in a fine state of division; but a better effect is now obtained by the use of oil-soluble aniline colours. These are obtainable in the leading shades of blue, green, yellow, red, and brown.

Rosin Candles, or Torches, used to be very common in France, but are now only used in Brittany. The method of

manufacture is the same as that adopted by the ancient Gauls. Hempen fibres are steeped in molten rosin, and then rolled between two hard bodies to give them a somewhat cylindrical form.

Cane Sugar. — Port. *Azucar de Canha;* Sp. *Azucar de Caña.* (See also *Sugar.*)

Cane sugar is made from the saccharine juice contained in the slender stems of the sugar cane, *arundo sacharifera,* a perennial plant, or gigantic grass, very sensitive to cold, and only thrives in regions bordering on the tropics, where there is little or no frost. The plant requires cultivating, and is not known wild in any part of the world.

It originally came from China; was cultivated in Persia A.D. 500, Egypt 750, and was produced in Sicily, 1148; in Madeira, 1419; in the West Indies, 1510; in Barbadoes, 1641. It is now cultivated in nearly all warm countries, and there are many descriptions grown. Large quantities are raised in Cuba by cheap coolie and Chinese labour, in the north-east of Java, where the population is very dense and labour cheap, also Peru and in Brazil. The latter country receiving most of her imported merchandise from England, the ships conveniently bring back sugar as return cargo, so that most of the Brazilian sugar comes to Europe. Most of the Cuban sugar goes to the United States.

The Cuban sugar houses, in regard to capacity, are really in advance of those of any other country. Very many can grind 1,000 tons of cane in 24 hours and some can do more than this.

There are in France and Belgium, known as *Usines Centrales,* factories where the juice is conveyed by a system of pipes from small juice stations to a central establishment, which equal or excel the Cuban houses in capacity, but elsewhere there are none so large.

The cane grown in Java is almost black in colour, and is called "Cheriban." It attains a height of about 15 feet, and weighs 5 to 9lbs. Peru also exports large quantities of sugar, but the late war with Chili was very disastrous to the industry. Most of the plantations were destroyed by the Chilian army, buildings were demolished, the irrigation ditches were cut, and the labourers were driven into the mountains to escape conscription. In fact, Peru has scarcely yet recovered, but is again exporting a considerable amount of sugar.

Other cane sugar producing countries are Argentina, Guiana, Trinidad, Demerara, Martinique, and Barbadoes, Venezuela, Colombia, Ecuador, Mexico, Natal, Queensland, the United States of America, and Egypt. All these have enormous areas suitable for sugar growing.

Cane sugar is probably produced cheaper in Mexico than in any other country. There are two kinds of cane planted, one called the *Cana criolla,* or Creole cane, which is about ½ inch thick, of a light-green colour, with thin bark, short joints, and very sweet. The other, called *Cana pinta,* or painted cane, of a reddish colour, one inch in diameter, thick, with a tough bark and longer joints. The latter yields best and is the kind mostly planted, although the former gives a whiter and harder sugar.

Hitherto the cane has been reproduced under cultivation solely by buds and suckers. Three sorts of cane sugar are grown in India—the purple, the white and a variety of the white requiring large supply of water. The best soil for the purpose is tenacious, without being heavy, readily allowing excessive moisture to drain away. In some localities, where the ground is low, the beds where the cane is to be planted are raised 4 or 5 feet above the adjacent land. The soil should be sufficiently elevated to be entirely free from inundation; but not so high as to be deprived of moisture or to encourage *white ant.* The cane or stalk is a long, round, hard and knotted stem, growing in favourable situations from 6 to 20 feet high, with leaves from 1 to 6 feet in length, and having at the top a large panicle or cluster of long hairy flowers, but the cane is always reaped before it flowers

The average height of the cane is about 10 feet, with a diameter of 1 to 3 inches. The stem is hollow, but jointed, or marked, with the scars of fallen leaves, as in the bamboo. The Otaheite cane has been the popular kind grown in West Indies; but it is said the *Jamaican* is a marvellous cane, and stands dry weather better.

Sugar canes have, however, been propagated from time immemorial by cuttings, although during these last three or four years attempts have been made with the view of remedying the deadly fungus growths and other diseases of the cane to obtain fertile seed from the arrow or inflorescence for raising cane, but this is a very difficult and slow process.

A day or two before planting the cane the field is ploughed and lightly rolled. The set consists of the top joints of the canes cut off, tied in bundles of 40 to 50 each, which are kept moist and stored for the purpose from the previous harvests. When wanted for planting they are dressed and dipped in a liquid manure of cowdung, pressed mustard-seed, and water. They are then placed separately in the rich dry soil, and covered with leaves and grass to protect them from the heat. Ten or twelve days afterwards they are planted about 2 feet apart in rows, 3 or 4 feet distant from each other, in the fields, carefully watered and frequently hoed. In due time a tangled mass of thread-like roots strike into the soft earth, and eventually a bunch of 10 to 18 aerial canes spring up out of each root-stock, and assume various shades—some of green or purple, some variegated with beautiful stripes.

It is a rather curious fact that very few persons appear ever to have seen any mature sugar *seeds*. In botanical works the subject is often mentioned, but apparently only to reiterate the fact that the sugar cane so rarely matures its seeds that they have never been noticed. So rarely have these flowers been seen that some writers aver the cane bears none, but as often happens with plants cultivated to a large extent, and which are cut down before they flower, they after a time cease to flower. It is the same with rhubarb at Banbury, peppermint at Mitcham, and in numerous other instances.

In India the canes are planted in February, and in the following January are ready for harvesting. The cutting is then continued through January, February, and March.

It is one of the main drawbacks in cane cultivation that seed time and harvest fall together.

Some kinds, however, are ripe in 10 months, while others require 12 to 20 months. The canes are richest just before the plant begins to flower, and the lowest part of the cane yields the most sap, hence the desirability of cutting them as close to the ground as possible. The stump which remains develops into a fresh plant, and may last in this way several years. These new shoots are called "ratoons," and in some of the West Indian Islands (Dominica, for instance) the plantations go on ratooning in this way for 20 or 30 years, after being once planted. We receive our heaviest supplies of cane sugars from the East and West Indies, Mauritius, and Brazil.

In the West Indies a gang of negroes is turned into the field just before the canes begin to flower, armed with cutlasses, heavy iron blades a couple of feet long, fastened to a short wooden handle to give a firm grip. One blow severs the cane low down and a second cuts off the top. These cut canes are at once tied up in bundles with wisps of strong green strap-like leaves. The bundles are loaded into ox or mule drays, which crash along the lanes to the mill-yard, amid the shouts of the drivers and the cracking of whips, for the negro is nothing if not noisy.

The canes are next thoroughly crushed, and, after tempering the dirty-looking juice with lime and boiling down, it is run into flat, wooden troughs to cool. Here it sets into a dark-brown mass of wet crystals; by rapidly rotating these in "centrifugals" the molasses present is driven out, and a refined product is ready for the table.

Unfortunately, cane sugar raising in the West Indies seems doomed, unless the English Parliament speedily impose countervailing duties, which shall be equal to the bounties allowed to beet sugar exporters by foreign Governments.

There are several ways of extracting the sweet fluid from the ripe sugar cane:—

(1) The most general one is by pressing the long canes between the iron rollers of horizontal sugar mills, which squeeze out the juice, the refuse stalks, called "Megass" or "Bagasse," being afterwards used as fuel.

(2) The cane may be reduced by the use of raspers, or "defibrators," to a coarse pulp, and the juice expressed by powerful presses, at the rate of about 65 per cent. of the bulk.

(3) The canes may be macerated in steam or water, and the juice then extracted.

(4) A newer method is that of diffusion, in which the canes are cut in small pieces, and the sugar obtained by repeated washings with hot water. As the juice spoils very quickly, no more canes are cut each day than can be pressed or ground. By the first method the juice falls into a shallow trough, where it is "defecated" by adding to it hot milk of lime, or other similar substance. It is next concentrated by a quick boiling in copper pans, and after the grosser impurities rising to the top are removed as scum, a little milk of lime is added for the purpose of neutralising the vegetable acidity. The syrup is then run off into narrow wooden coolers, where the sugar concretes or partly crystallises, thus separating from the liquid which afterwards is known as molasses. The crude sugar is then put into hogsheads with holes in the bottom, through which for a month or six weeks more of the non-crystallisable fluid or molasses drain off into vats below, leaving the sugar in the state known as muscovado or *raw sugar*. Sometimes the molasses are separated more quickly by centrifugal force. A gallon of juice is usually obtained from about twenty ordinary canes, and yields about a pound of raw sugar, and in this state it mostly reaches the British refiner in Liverpool, London, Greenock, or elsewhere. The refiner generally commences by washing these raw sugars, mixing or dissolving them in hot water to which a little lime has been added, and then filtering first through cotton bags, and then through layers of bone black (animal charcoal) to discolour and clarify it. Up to a few years ago bullock's blood was used for precipitation of the raw sugar, but a more desirable substitute has been found, and this bone filtration leaves the liquid a water white. Being thus separated from all impurities, it is next boiled in vacuum pans with steam, and then whipped dry by a centrifugal machine into *Crystallised Sugar*, and thus separated from the unsolidified portion, or syrup, and may be then dealt with in two or three ways. (1) It may be further dried and passed through a bolting process which regulates or separates the different sized granules ready for market in bags, or (2) it may be put into moulds, conical or other shaped, to dry as Loaf Sugar, and the syrup which drips out is known as *Golden Syrup*. (3) The liquid intended for making into *Cube Sugar* after leaving the centrifugal machine goes into a cylindrical drum, with two sizes of holes—square and half square. As this drum revolves, its contents pass through the holes, in cube shapes, on to large plates that are conveyed by a mechanical carrier toward an oven, in which they are transferred for six hours of baking, after which the cubes are passed over an oscillating sieve for screening broken pieces, and are then dropped into cases or barrels, which are performing a sort of jim-jam waltz, in order to shake down the sugar as compactly as possible.

A great art in sugar boiling nowadays is to produce what is known as *fine grain*, that is concentrating the syrup until minute particles acquire a granular form, and then *feeding* these with liqueur till they have the appearance of large grains of yellowish colour. This kind is mostly sold as "pieces"

yellow moist sugar. To improve the colour of the sugar, a little sulphuric acid is generally put in the pans with the liquid sugar. The process known as "bluing," to impart a whiter and brighter appearance, is usually effected by suspending ultramarine in water, and applying it as a final wash, or let it into the vacuum for a few minutes before the batch or "strike" is finished. A teaspoonful is enough for a ton, but some beet sugars are so excessively blued that they yield a blue syrup on solution.

Genuine cane sugar possesses much higher sweetening power than common beet sugars, and no jam or British wine manufacturer would use any other.

Importers and Merchants.—Graham, Son & Hay, 16 Stanley Street, Liverpool; The Pure Cane Sugar Co. (J. Philip & Co., agents), 4 Fenchurch Buildings, London, E.C.

Canella Alba or **White Canella.**—A kind of cinnamon in small pipes. It is both outwardly and inwardly of a yellowish white colour, and thicker than ordinary cinnamon.

It has a fragrant smell, and a smart pungent taste, with the aromatic flavour of cinnamon, ginger, and cloves combined.

White Canella also yields, upon being macerated and distilled, an aromatic essential oil of yellowish colour, which sinks in water, and has the smell of oil of cloves.

Canica.—A sort of wild cinnamon growing in the Isle of Cuba. Its taste, however, is more like that of cloves than of cinnamon.

Canna Starch.—See *Tous-les-mois.*

Canned or **Green Corn, etc.**—(See also *Maize.*)—An American product consisting of maize (Indian corn), that has been gathered full-grown, but green and milky, and the grains or kernels of which have been cut from the cob and closely filled into clean tins, so as to leave no air-spaces. These are placed in a large oven or other air-tight vessel, and steamed from 4 to 8 hours; the harder the corn, the longer the exposure required to cure it. The lids are then soldered on, leaving a small vent-hole, and the full tins again boiled for about two hours. Immediately the steam has escaped and before cold air can enter, the hole is quickly soldered up. Sometimes the corn is boiled on the cob and cut off afterwards, which is perhaps the best plan. It is then filled into tins or "cans," and hermetically sealed.

The corn may be canned either way, and will keep good for years, but lacks much of the delicious flavour of the fresh gathered corn.

It is chiefly prepared in Maryland, New York, Maine, Iowa, Illinois, Ohio, and Virginia.

Fruits, Tomatoes, etc., are all canned in much the same way, but Green Corn, owing to its density, is one of the most difficult to preserve.

Canned Corn often sours from imperfect curing. It arises from the disease germs, either the microbe or bacilli. The first are round like minute balls, and the second are elongated or rod-shaped; both vary in size, and the growth or division is very rapid. With a microscope they may be seen darting and twisting in all directions. In the spore state they resemble small oval beads, and have no motion. In their normal condition microbes are easily killed in a boiling heat, and many will succumb even at a lower temperature. Most of the disease germs may be killed at 212° or lower, but 250° F. will make sure work of them, but the heat must reach the centre of the can.

About three million cases, of two dozen tins each, are put up yearly in the United States, prices varying from 2/- to 6/- per dozen tins in New York. Tinned corn is judged by whiteness, tenderness, sweetness, and juiciness, and these qualities vary considerably in different brands.

Canned Beets have now a good sale in the United States and Canada.

Machinery has reduced the cost of packing to a wonderful degree. One machine automatically sifts and separates peas into different grades or

sizes; another places the brine on them, and fills 18 tins at a time with the desired quantity of peas, and has a capacity of 5,000 to 6,000 cans per hour. Another cooks maize or green corn, and also fills the tins with the processed article. Another invention labels the tins in the most perfect manner with great rapidity, and then packs the tins in wooden cases. Other machines pack tomatoes in tins, and still others "cap" or solder on the lids.

Canned Fruits.—(See also *Bottled Fruits*, *Tinned Meats*, etc.)—It is a singular fact that we are indebted to Pompeii for the great industry of fruit canning. Years ago, when the excavations were just beginning, a party of Cincinnatians found in what had been the pantry of a house many jars of preserved figs. One was opened, and, although they had slumbered through many centuries, they were found to be fresh and good. Investigation showed that the figs had been put into jars in a heated state, an aperture left for the steam to escape, and then sealed with wax. The hint was taken, and the next year canning fruit was introduced into the United States, the process being identical with that in vogue in Pompeii twenty centuries before. Large factories are now occupied in this business, especially in America, where the growth of the industry has been phenomenal. The work being done in the summer and early autumn, a cheap building is all that is necessary. "Canning outfits" are sold complete by several firms. The outfit required for canning purposes is very simple, consisting of a large wooden vat, in which water can be rapidly made to boil by means of steam. This vat is provided with a basket made of small iron rods, hung by a tackle to a crane. This basket is to hold the cans, and is so arranged that it may be promptly lowered into or raised from the water. Cans cost about two cents. each, are made on the place by expert tin-workers, and by the aid of machinery three men will make 100,000 cans a day; the cost of labour, labels, and boxing is comparatively trifling. The profits are said t range from 25 to 40 per cent.

The fruits should be fully ripe especially apricots, nectarines, peaches and pears; not soft and mushy, but s that they will keep their shape. The are often canned too early, and, althoug these may look better, the flavour will b deficient, for flavour only comes wit ripeness.

Glass is best, but tin will do; onl there is the slight danger of the acid the fruit dissolving a portion of the ti

For home use the fruits are ofte merely cooked in a porcelain or granit ware kettle in small quantities of 12 20lbs. a time, and, when cooked, poure into tins or jars, and sealed at once.

If the finest appearance is desired, a fruit that is peeled or cut should be once dropped into water to keep it fro discolouring. By the aid of a silv spoon or knife the pieces can be arrange in the can systematically and regularl and the can should then be shaken dow solid as possible by gently jolting the table.

It should be filled with syrup. Th amount of sugar in this syrup is not ve important, but most people prefer a goo heavy syrup. The filled cans, with t covers loosely on, are now placed in boiler (a sort of "copper"), with wat enough to reach up nearly to the nec and the whole brought to a boil, a kept long enough to cook thoroughly.

Each fruit or vegetable, in order th it may keep, requires to be steamed "processed," as the boiling is calle for a given time; how long appears be the chief secret of the business, a depends largely on the ripeness of t fruit.

The following table shows averages:

	Time for boiling. Minutes.	Sugar quar fru Oz
Cherries	5	6
Raspberries	6	4
Blackberries	6	4
Strawberries	8	8
Plums	10	10
Whortleberries	5	8
Pie Plant	10	8

Sour Pears (whole) ...	30	4
Bartlett Pears (halves)...	20	6
Peaches (halves) ...	8	4
Peaches (whole) ...	15	4
Pine Apples (sliced) ...	15	6
Crab Apples	25	8
Sour Apples	10	5
Ripe Currants	6	8
Gooseberries	8	8
Wild Grapes	10	8
Quinces (sliced) ...	15	10
Tomatoes	20—½ teaspoonful of salt.	

The fruit shrinks considerably in ›oking, and, therefore, a few pieces, ith extra sugar, are cooked in a :parate dish to fill up with, if necessary. As soon as the cans are cooked enough ıey are removed from the water, the ›vers removed, and the cans filled as ill as possible with boiling hot syrup. hey are then wiped and soldered up, screwed down tightly with rubber-tted tops.

The fruit is then set aside, where it ın be watched for a week or so, and ıen, if no fermentation is noticed, it is acked in cases, or stowed away in a ark place to keep. If any can looks ›ubtful, the top is covered tightly with ›tton, and will then probably keep long ıough for home use.

To prevent the hot fruit breaking the ass jars, they are stood on a wet folded oth while being filled.

"I had the pleasure," writes a corre-›ondent, "while at Buffalo, of getting glimpse of a Convention of Canned oods Packers, and of visiting an ex-ibition of the machinery which is so :tensively used in preserving food. ne huge machine picks up the ears of :een corn or maize, carries it along, rips off the husks, brushes off the silk om the cob; another cooks the kernels corn, conveys it through a pipe to a ter, where it is packed into the tin can, hich is then sealed; another fills a tin ith peas and puts on the brine or quor. Others take the tins, place on e caps, brush in the soldering flux, ılder the cap, and pass the tin along. nother puts on the labels and packs ıe tins in boxes of two dozen each. They have a machine which takes the peas, strips off the pods, then shells the peas, and afterwards sifts them into six grades. The owner of this machine stated that he yet expected to perfect a machine into which pea vines could be fed, and, by automatic action, the pods taken off, the peas shelled, graded, packed into tins, and sealed. Here I found many machines for packing corn, peas, tomatoes, and having a capacity of handling 20,000 to 40,000 tins per day of ten hours. When one is witness to the wonderful extent to which machinery is used in the preserving of food, and how greatly it exceeds in amount of work the power of human hands, he begins to understand how it is a very good canned pea is sold at 2/10 to 3/- per dozen; corn and tomatoes at about the same price. I met one manufacturer who, by the aid of machines, turns out 60,000 pounds per day of condensed mincemeat, and will average that daily output for months at a time. Evidently the American's love of pie is not growing less.

"The attendance at the Convention reached nearly 300. There were some scientific papers read, in which the cause for the souring of sweet corn was given as due to the action of bacteria. The remedy is in preserving at a temperature of 250° F., for 60 minutes, under pressure. Of course a banquet and the inevitable speech-making is a feature of these gatherings."

If less than 8 ozs. of sugar be used to the pound of strawberries they are apt to lose much of their shape, freshness, and flavour, turning out pale, spongy, and insipid; but raspberries, on the contrary, seem to have their colour, flavour, and odour intensified. Success does not depend so much after all upon the amount of sugar used, as upon driving out the germs of fermentation by heating the fruit and excluding the air. Tomatoes are first scalded and peeled as for cooking, then boiled for about 15 to 20 minutes only, and canned as above.

By another method the article to be preserved is cooked for a short time first,

and then put into hot jars or tins, from which the air has been expelled by heating them to boiling point. They are at once sealed, and when cold are stored in a cool dark place.

Canned fruits are generally packed in 2½lb. tins, but some are also packed in 3lb. tins, and "seconds" or *pie fruits* in gallon cans.

All canned foods are best fresh as possible, and cans corroded inside should be rejected on account of the tin salts or stannic oxide incorporated in the food and likely to be injurious to health. Some authorities attribute the presence of these salts of tin to the use of hydrochloric acid employed in soldering.

Canned fruits, as well as canned fish, meats, etc., all contain larger or smaller traces of tin, caused by the feebly acid juices of the meats and by the more abundant acid juices of the fruits eating into the tin. Analysts have found from 1½ to 11 grains of dissolved metal in 1lb. cans, the larger proportions, however, being only found in some of the cheaper qualities of apricots.

The juice of the fruit being apt to dissolve some of the solder, or even the tin, although the metal is not actually poisonous unless consumed in large quantities, or by children when there is irritation of the bowels. The best packers, of course, by carefully selecting their tins, seeing they are free from scratches, etc., and using fruits of only a moderate acidity, render the risk of contamination from tin very slight. The "watered" deposit observable in the inside tin coating of cans of preserved fruit or vegetables, together with the discolouration of the contents, do not prove that they are bad or even going bad, unless they are absolutely coloured a brown tint. The stains are generally merely caused by sulphuret of tin, containing iron also, and this matter is formed by the decomposition of sulphuretted compounds in the vegetables themselves. The tint is darker, according as the fruits are older and were riper when canned.

Recently several fruit canning factories have been started in British Columbia, the principal being in Vancouver and New Westminster, where black currants, plums, pears, apples, etc., have often gone to waste.

California has a great fascination for fruit consumers, and although growers in the Eastern States of America aver that the flavour is much inferior to their own growths, yet it is a common practice in Baltimore and New York State to label other products as "*Californian*." In fact, labels on tinned goods are very unreliable, both as to quality of contents and place of origin. A case of Californian canned goods weighs about 65lbs. gross.

The care that is exercised abroad in canning goods, preserves the fruit and other food in good condition as a rule, but it cannot prevent stoned fruits, such as cherries and plums, from occasionally undergoing a change after being tinned for a certain time. These goods will often be found faulty in the spring, although all necessary attention was paid in the canning; it is, therefore, as well to use tinned fruits containing stones early in the season—that is, in the autumn—and reserve the peaches and apricots (from which the stones are removed), pines, etc., for consumption in the spring.

Cold Canning is now done in many households. Heating the fruit tends more or less to the injury of the flavour, and, instead of cooking, it has been found that by filling the cans with fruit and then with pure cold water and allowing them to stand until all the confined air has escaped, the fruit will, if then sealed perfectly, keep indefinitely without change or loss of original flavour.

Frost, of course, ruins the quality and flavour of fruit and vegetables, canned or fresh.

Special Firms.—M. & W. Jones, exporters, Villa Nova de Gaya, Portugal; and Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool, also proprietors of the "Orient" brand of Tomatoes.

Canned Meats.—See *Tinned Meats*.

Cannel Coal. — Sp. *Ampelita*. (Also known as *Candle Coal*, *Parrot Coal*, etc.)

A highly bituminous coal, opaque and brittle, breaking into more or less regularly formed cubes, and burning clearly, hence its name of *candle* or cannel coal. It is the best for gas making.

Found in Lancashire, Ireland, and Scotland. This coal is also susceptible of a high polish, and is often made into cheap trinkets resembling jet.

Cantal Cheese or **Fourme.** — A French kind made in the department of Cantal. It is of cylindrical shape, about as high as it is wide, and weighing 50 to 100lbs. The interior is whitish, full of small crevices, and fairly rich. The taste is rather peculiar, but appreciated by the Auvergnais, and the annual production is about 100,000 quintals.

Cantaloup. —A superior but small variety of musk melon, which takes its name from Cantalupo, the residence of the Popes, a few miles from Rome. (See *Melons.*)

Canter Cheese. — A term used in Cumberland for blue-milk cheese.

Cantharides or **Spanish Flies.**— F. *Cantharides;* G. *Spanische Fliegen;* It. *Cantaridii;* Sp. *Cantaridas.*

A kind of dried beetles, *Cantharis vesicatoria.* The beetles are about three quarters of an inch long and a quarter of an inch broad, with two long elytra or wing sheaths of a shining coppery green colour, under which are two thin brownish transparent membranous wings usually mixed with greyish brown powder containing bright green particles.

Their odour is somewhat strong and disagreeable, but they are valued for their stimulant and diuretic properties.

They are usually reduced to powder as required, for ointments, tinctures, plasters, etc.

Cantharides Vinegar.—See *Vinegar*

Cape Gooseberries.—An excellent fruit (*Physalis edulis*) resembling cherries, very popular in South Africa and Queensland. They also grow freely without any special cultivation in Madeira, where they are called *Tomates Inglez* (English tomatoes), and are in season from February to April. The flowers are white, and the berries yellow. In early Spring great quantities of these sweet and acidulous fruit are made into delicious preserves, but, so far, very little reaches this country, the pulpy nature of the fruit precluding its exportation in a fresh state. It is very nice when candied for dessert.

There is another variety of the plant, *P. Violacea*, which bears yellow flowers and violet-coloured fruit, but the yellow is the most esteemed.

Cape Madeira. — A heavy, boiled, and mixed sweetish wine, containing about 12 per cent. of alcohol.

Imported from the Cape of Good Hope.

Cape Tea. — See *Boer Tea.*

Cape Wines. — The leading descriptions of wine made at the Cape of Good Hope are :—(1) Sweet wines, under the general name of "Constantia"; (2) Dry white wines; and (3) Table wines.

The *sweet* are made from the highly ripened white and red Frontignac grapes, and from the red Haanepoot. The second description includes white wines belonging to the large categories of Madeira and South Spanish wines, particularly of the sherries, alicantes, and white ports. The chief sorts of grapes used for these are the Haanepoot and Muscatel.

The best red table wine is that made from the *grosse syrah*, a kind of "Hermitage" vine.

Pontac (described elsewhere under its name).—The white table wines are made from Riesling, Steen, and Spengler grapes, and appear in the market as "still hock" or "white Hermitage"; but are all far too alcoholic and heating for the climate.

Yearly production of Cape Wines is about 200,000 hectolitres.

Caper Teas. — (See *Chinese Teas.*)— These may be generally told by the leaves being rolled up into little lumps with starch or gum. As a class they are much adulterated, and, in fact, can hardly be called genuine tea. The

demand for them in England is now very limited. The boxes average about 21lbs. each.

Capers.—Du. *Kappers;* F. *Câpres;* Ger. *Kappern;* It. *Cappari;* Rus. *Kaperszii;* Sp. *Alcaparras;* W. *Sibr-flagur.*

These are the pickled flower-buds of the caper plant, *Capparis spinosa,* very common throughout the South of Europe, and nearly allied to nasturtions.

The bush, or "alcaparra," is a low trailing shrub often growing on old walls, fissures in rocks, or over rubbish heaps, and bears white and purple blossoms. The plant is also largely cultivated as a garden ornament. Each bush yields about a pound of capers yearly. The buds are usually picked every morning as they approach maturity from May to November, exposed in the open air for 24 hours, and then thrown into a cask or other vessel of strong white pickling vinegar, and when full these are headed up and sold to the wholesale merchants.

These merchants sort them into different sizes by means of copper sieves, and in this way they are divided into various grades, such as *Communes,* ordinary value about 15/- per cwt.; *Mi-fines,* 32/-; *Fines,* 36/-; *Capotes,* 40/-; *Capucines,* 50/-; *Surfines* (or Superfines), 58/-; and *Nonpareils,* 84/. The last, being the youngest and smallest in size, are considered the choicest; while Communes are the largest and cheapest. The agreeable taste and sharp acrid flavour for which capers are so valued seems to be the capric acid—$C_9H_{19}CO_2H$, called also rustic or decatoic acid—which, in large quantities, has the offensive smell peculiar to goats.

Capers also contain a gelatinous substance, related to the *pectin* group.

Their greenish colour is heightened by the copper wires in the sieves, but sometimes copper coins are put in by the country people, and for retail purposes capers are generally put up in green bottles. The finest quality of vinegar, previously boiled and cooled, is generally used, inferior kinds being apt to spoil the capers. Those grown in the South of France are considered to be the best, especially those of Provence; Roquevaire, Cuge, and Ollioules growths, firm and of good colour, have long been held in high repute, and will keep good for several years. Capers are usually very cheap in Marseilles in June, July, and August, but buyers should beware of Spanish and other inferior kinds, commonly labelled and sold as "French capers," although they have merely been imported *by way* of France, hence the port of shipment is no proof of their origin.

Besides France and Spain, considerable quantities come from Italy; another cheaper quality from Algeria, and a few small salty capers arrive from Majorca. A flat shaped variety also comes from Lyons.

The presence of copper colouring in capers is easily detected. Take a teaspoonful of the liquor and put it into a wine-glass, add a little water, and then an excess of ammonia solution; if copper be present, a beautiful blue colour will be produced. The ammonia solution should be strong, and well stirred in with a bit of glass rod, which can be had at any chemist's shop for a few pence.

A simpler test is to immerse the clean steel blade of a penknife or a knitting needle in the caper liquor, and leave it there overnight; next morning examine it, and if copper be present there will be a red deposit of pure copper on the surface of the penknife or needle. It is best not to add water in using this latter test, and if there is much copper the steel then becomes coated with it very quickly.

Special Importers.—Charles Cocks & Co., Reading.

Capillaire.—Lat. *Herba Capillorum.*

A syrup made by infusing 2 ozs. of the Maidenhair Fern, *Adiantum Capillus Veneria,* in 1½ pints of boiling water, and 2lbs. of pure cane loaf sugar, which is poured while boiling hot on 2 ozs. more of the fern, and about two hours afterwards strained clear.

Another recipe:—16lbs. lump sugar

and 6 eggs, well beaten; boil in 3 gallons of water, and skim it as long as any scum appears; then strain through a bag, and, while warm, add a few drops of essence of lemon.

It is often prepared from simple sugar syrup, perfumed with orange flower. Retailed in 6d. and 1/- bottles.

Capsicums. — F. *Piment des Jardins, Piment rouge;* G. *Spanische Pfeffer, Schotenpfeffer;* Lat. *Capsici fructus;* Port. *Pimentos;* Sp. *Pimientos.* (See also *Chillies, Bird Pepper, Cayenne, Paprika,* etc.)

There are several species of capsicums. *C. annuum,* known also as Guinea pepper, exists in an enormous number of varieties, especially in Central America, but also in Japan, West Indies, Natal, and Zanzibar. One of its varieties, used for feeding birds, is more fully referred to under *Bird-Peppers. C. cerasiforme,* or Cherry Pepper, has cherry-shaped red and yellow pods; *C. dulce, C. americanum,* or *C. tomatoforme; C. baccatum,* see *Bird Pepper; C. grossum,* or *Bell Pepper,* native of India, etc., etc.; *C. fastigiatum Bl.* (*C. minimum Roxb.*), or smallest Red Chillies; *C. tetragonium,* etc., etc.

The Capsicum is a comparatively hardy plant, but the fruit has very little flavour. The *Capsicum grossum* is very popular, and the only kind proper for pickling, its skin being thick, soft, and tender, whereas that of the other sorts is thin and tough.

The shrubby capsicums of Sierra Leone, distinguished as *C. fastigiatum Bl.* (*C. minimum Roxb.*), or *Small red chillies,* are scarcely an inch in length, a line or two broad, and of a deep orange red colour. These last are hotter, and possess considerably more aroma than the other species of capsicums. Each pod encloses about a dozen flattened reniform seeds. They are cultivated very extensively on the south-east of Zanzibar by the Wahadinu people, as also is another variety bearing larger red and yellow pods, but this is all consumed locally. As a rule, Zanzibar capsicums are of a brownish red colour, dirty looking, and inferior, but very hot. Those from Japan, on the other hand, are milder, sometimes rather sweet, or almost tasteless (see *Japanese Pepper*). The kind imported from Natal is an inferior variety of *C. annuum,* much larger than "Chillies," and of a dull brownish-red colour, also very pungent. The yellowish red pods grown in Sierra Leone are also very pungent, but inferior in aroma and appearance. The names of the different varieties are, however, very much confused, and the terms capsicums, chillies, red peppers, red bird-pepper, cayenne pods, birds'-eye chillies (very small and red), guinea pepper, chili pepper, maleguetta pepper, grains of paradise, are all used promiscuously in different parts of the country; but, as a rule, in commerce, the smaller pods are called "Chillies," and the larger "Capsicums."

The plants bear white flowers, and grow luxuriantly in most hot countries. In the south of India they grow wild, and form the chief seasoning used by the natives. (See *Nepaul Pepper.*)

The drier and hotter the soil, the more pungent the fruit. In all tropical countries some form of capsicum is an article of daily diet. It seems to be nature's tonic for the stomach in hot climates.

Immense quantities are eaten raw and green, some are pickled, others made into chutneys and curries. When red-ripe they are generally exported either in cask with salt and water, or dried in the sun and baled. They are often pickled in brine, and used in seasoning mixed pickles, sauces, etc. Also dried and ground into powder to make "cayenne pepper."

Capsules.—See *Metallic Capsules.*

Captain Biscuits. — Captain Biscuits are very similar to *Sea Biscuits,* but are made from finer flour. Take 8lbs. of flour, ½lb. butter or lard, and a quart of milk. The dough should be thoroughly kneaded, or broken by break, or in machine, till quite smooth, and baked in a fairly quick oven.

Capucines.—See *Capers.*

Caracas Cocoa.—This is a fine quality of cacao, grown in Venezuela. It used to be considered superior to any other, but has been surpassed by the Ceylon product. The best qualities come from Ocumare and Caracas, and the more ordinary from Rio Chico and Higuerote (Port Carenero).

The method of curing in Caracas is first to spread out the newly gathered pods in the shade of an outhouse for a week or so to mature. They are then opened with a knife, and the seeds or beans, spread on tables, are exposed to the sun until they turn red. They are next covered up closely with banana leaves and fermented or sweated daily in a cool place for four or five days, but are stirred and aired every morning and evening. After this they are again spread out and dried in the sun till they sound hollow, when they are ready to be sacked for the market.

The beans, or seeds, are more spongy than the *Criollo* kind (see *Cocoa*), and 14 to 16 pods yield 1lb. of beans.

The manufactured article sold in England as "Caracas Cocoa" is understood to be prepared from about 50 per cent. of this kind of cacao, with arrow-root and sugar added.

Caraburna Raisins.— These come from Samos, a Turkish town in Asia Minor. They are very plump and sweet, and are largely used in France, in their dried state, for wine manufacture.

Carambolas. — The fruit of *Averrhoa Carambola*, imported from the East.

Caramel. — See *Burnt Sugar Colouring.*

Caramels (Sweetmeats).—These were of American origin, but the English makes are now generally preferred. Usually made up of glucose, sugar, milk, and butter or cream, and exquisitely flavoured with chocolate, vanilla, etc., etc. They are either moulded or cut in the shape of dice, each piece being afterwards wrapped in waxed paper.

Caravan Tea.—A commercial name for tea grown in China, packed into large bales, covered with lead, and carried into Russia entirely overland. It used to have the reputation of being the best tea produced in China, and some say its superior and delicate flavour is enhanced by this mode of transit, or, at least, preserved from the "ship smell" of teas coming to Europe, but now only common grades are sent overland. (See *Brick Tea.*)

Caraways.—See *Carraway.*

Carbolic Acid.—F. *Acid phenique*; G. *Carbol säuren*; It. and Sp. *Acido fenico.*

This acid, or *Phenol*, as it is technically termed, is a very abundant product in the distillation of coal, and recognised as a valuable disinfectant and deodoriser. It is also an excellent antiseptic, and largely employed in surgery as a wash for ill-conditioned ulcers and gangrenous sores. Weak carbolic acid has been found to be a valuable protection against the bites of gnats and insects. Sponged on the skin and hair, and in some cases the clothing, it will drive away the whole tribe. The safest plan is to keep a saturated solution of the acid, which cannot contain more than 6 or 7 per cent., and it may be added to water until the latter smells strongly. This may readily and with perfect safety be applied with a sponge. Horses and cattle may be protected in the same way from flies, which sometimes nearly madden them.

Carbolic Deodorising Powders.—These are of various strengths, but their basis usually consists of a mixture of freshly slaked lime (dry) and ordinary whiting coloured with rose pink. An infusorial earth, known as *Kieselguhr*, is used for the better sorts, and is much more absorbent. It may be coloured in the same way. A deodoriser is not always a disinfectant.

Carbolic Soaps. — These if well made possess great disinfectant and deodorising powers, particularly if they contain not less than five per cent. of phenol, and are invaluable for washing

linen of fever patients, also for cleansing infected chambers. A strong carbolic soap generally contains about 1 part of carbolic acid to 9 parts of soap, but this is too strong for personal use, and a milder variety known as carbolic toilet soap is prepared for this purpose, in which about 2 per cent. of carbolic acid is added to the soap while in a melted state, and thoroughly incorporated by "crutching."

Its thorough incorporation, without leaving the product soft, requires considerable skill, and the best methods are, in fact, considered secrets. A good carbolic soap is made of the following:—20lbs. half-palm soap; 1lb. starch; 1 oz. carbolic acid in crystals and perfumed with 2 oz. oil of lavender and 1 oz. oil of cloves.

Carbonade of Meat.—A piece of meat, fowl, or game, cut, sliced, or scored across, and seasoned, and highly broiled or grilled over a coal fire, almost "carbonised" or burnt. These dishes are very popular in Germany and other northern countries.

Carbonate of Ammonia. — See *Ammonia.*

Carbonate of Soda.—F. *Carbonate de Soude;* G. *Natriumcarbonat;* L. *Sodium Carbonate.* (See also *Washing Soda.*)

The word "carbonate" is applied in a general way to any salt which has been formed by a combination of carbonic acid and some other base. Therefore, carbonate of soda means a combination of carbonic acid and soda.

Also known as crude soda, alkali, soda ash, etc. Soda is procured from several sources. In Egypt, Hungary, and some other countries it is found as an incrustation in dried-up soda lakes in the summer season. Some is obtained from "barilla," the ashes of kelp and other plants growing on seashores.

It is also produced from *Cryolite*, a mineral found in Greenland and in the Ural Mountains. This mineral being ground to powder is mixed with lime, water is added, and it is then boiled. But the great bulk of the carbonate of soda of commerce is prepared at chemical works from common salt. The salt being first dissolved by sulphuric acid, and afterwards roasted with lime, chalk, and small coal, is next formed into a pasty substance called "black ash." This black ash, when drawn from the oven and cooled, is then acted upon with water, and a solution is obtained which is finally evaporated and calcined into the form of carbonate of soda. Soda is, as we know, decomposed by the action of heat, and carbonic acid is given off with the formation of a sesqui-carbonate, which in turn is transformed into a normal carbonate.

The mode of manufacturing it from common salt was invented by a Frenchman named Leblanc, at the end of last century, in competing for a prize offered by Napoleon; and has since made way for the simpler "ammonia process," whereby a solution of common salt is treated with bi-carbonate of ammonia, and by this *bicarbonate* of soda is produced.

Bicarbonate of Soda.—*Carbonate* of soda, as above shown, is a salt formed by the union of carbonic acid with the base (soda) $NaHCO_3$. When the base is imperfectly saturated with the acid, the salt formed is called a *sub-carbonate*, and when there is an excess of acid, *bi-carbonate.*

Sesqui-Carbonate of Soda.—*Sesqui* is a Latin prefix meaning a *whole and a half;* hence sesqui-carbonate of soda is a concentrated compound, in which an equivalent and a half of carbonic acid combines with one of soda. It is technically represented by $Na_4H_2(CO_3)_2H_2O$, and is the best form of washing soda, doing about twice the work of common *Sal Soda.* Over 350,000 tons of carbonate of soda are made yearly in this country. It is used in enormous quantities in the arts and manufactures, has a stronger alkaline taste than the bicarbonate of soda, and is more readily soluble in hot water. Although all these preparations are commonly called "Carbonate of Soda," the white powder usually dealt in by grocers and druggists is either bicarbonate or sesqui-carbonate,

and the proper carbonate of soda is, as a rule, only used in manufacturing operations.

Gardner's patent "Rapid" Sifter and Mixer is freely used for above. Prices, from 50/- to £100. Catalogues from Wm. Gardner & Sons, engineers, Gloucester.

Cardamoms or **Elatchee.** — Da. *Cardamomer;* Du. *Kardamomen;* F. *Cardamomes;* G. *Kardamum;* It. *Cardimomi;* Rus. *Kardamom;* Port. and Sp. *Kardamomos;* Sw. *Kardemummer;* W. *Grawn Paradwys.* (See also *Grains of Paradise.*)

The spicy and bitter seeds of a reed-like plant growing five to ten feet high in Southern India, China, Ceylon, and Java, known as *Amomii Cardamômum.* They are largely grown in Malabar, where the plants are called *Elettari.* In Travancore cardamoms are a sirkar monopoly, and cultivated in gardens of about 20 acres by the ryots or native farmers.

There are many varieties, both wild and cultivated, and, in commerce, they are merely divided into three grades, viz., "shorts," "short-longs," and "long-longs," according to their length. It is also customary for several kinds to be also mixed together and classed as the greater or the lesser cardamoms. The chief exports are from Cochin China, Annam, and Tonking, and amount to about 100 tons a year; but, as with certain other Chinese products, very little is to be learnt about them botanically. They are usually packed either in gunny bags, or in large chests, well jointed and pitched. The seeds, about the size of mustard seed, are of dark brown colour, of pleasant smell, and aromatic taste, and grow in three-cornered pods of pale colour and about half an inch long. They also possess hot, pungent, carminative, and stomachic properties, yielding about three per cent. of oil, and are largely employed in medicine, especially in veterinary practice, as well as in culinary sauces, soups, curries, cordials, cake seasoning, etc., but mostly for imparting a factitious strength to beer and spirits. They lose their strength quickly when ground, and should be chosen in the pod, close shut on all sides, each pod full of seeds of pleasant smell and an acrid aromatic taste.

The ovoid cardamom, the fruit of Amomum medicine is a native of south-western Kwangsi, as well as of Tonquin. Ground cardamom are often adulterated with the wild cardamoms of Ceylon, Siam, and Korarima, but the pericarps are distinguishable by their bast fibre, the wild seeds being also characterised by the thick walls of their epidermal cells.

Wholesale prices, 3/- to 4/6 per lb.

Cardon, Cardoon, or **Chardoon.** —F. and Sp. *Cardon;* Lat. *Carduus.* (See also *Artichokes.*)

A prickly species of Cynara (*C. cardunculus*), closely related to the thistle and the artichoke, but larger. They should be tall and upright, and the ribs of the leaves of fleshy consistency. The cardoon differs from the cultivated artichoke in that the ribs of the leaf of the former have been developed, whilst in the latter the flower heads have been the objects of selection. Mostly imported from France, and sold in tins of ½lb. 1lb., and 2lb. sizes.

Also cultivated in this country. The seeds should be sown in heat—three seeds in a 40 pot, removing the two weaker ones when it is seen which is the strongest seedling. Harden off in a cold frame when the roots get round the sides of the pot, and plant them out in May in trenches 18 or 24 inches apart in the trench, and five feet from trench to trench.

In the Pampas of Buenos Ayres the cardoon, although only naturalised there during the 19th century, has grown wild and spread with such abundance as to obstruct travel and traffic in some parts.

The plants require much water when growing, also when blanching, but are very useful vegetables, although the flavour does not please everybody, and they are often grown merely as garden ornaments.

Cargo Rice.—A term applied to the coarse but sweet and large-grained rice which is principally exported from Bengal, only about one part in five being husked. It is preferred by the natives to every other sort. This rice is not kiln-dried, but is parboiled in earthen pots or caldrons, partly to destroy the vegetable principle, so that it may keep better, and partly to facilitate the process of husking.

Carlowitz Wine.—A sound red wine produced near the town of this name, and the best known of Hungarian wines.

It has a rather rough taste, not unlike Burgundy, and is very popular as a dinner wine.

Carlsbad Sugar Wafers. — A dainty wafer-like kind of dessert biscuits, very thin and delicate, with a sprinkling of fine sugar between.

Carmine. — Du. *Karmyn;* Fr. *Carmine;* Ger., Pol., and Rus. *Karmin;* It. *Carminio;* Dan., Sp., and Sw. *Carmin;* W. *Lliw Coch.*

A very beautiful red or carnation-coloured pigment bordering upon purple; a species of lake in powder; largely employed by artists in miniature. The best for colouring foods is made of finely pulverised cochineal by means of water in which "*chouan*" or "*antour*" has been infused. It is, however, well known that much of the carmine prepared from cochineal does not consist of the pure pigment, as it generally contains a considerable amount of ash which should not be there. Others prepare it with Brazil wood, pernambouc, and leaf gold, beaten in a mortar and steeped in vinegar, the scum which arises forming an inferior carmine. Carmine is also made with carbonate of potash, alum, and fish-glue; but this requires very skilful manipulation. Carmine used to be very high-priced, but since the discovery of aniline colours its value has considerably lowered.

Carminic Acid. — See *Cochineal Colouring.*

Carnauba Wax.—(See also *Vegetable Tallow.*)—This hard and brittle wax, often called *Ceara* or Brazil Wax, because it is indigenous to the State of Ceara, is obtained from the young leaves and berries of a black palm (*Copernicia cerifera*) and others in Brazil. The leaves and crushed berries are steeped in boiling water, and the wax rising to the surface is skimmed off. It forms a crisp, translucent covering on both sides of the leaf, and may even be scraped off with a knife, or it may be shaken from the leaves after rubbing or beating them together.

It has an agreeable smell. Unless harvested while the leaves are young, it falls off of its own accord when they are more fully grown. The wax is then dried and stamped in a mortar, and then fused to separate it from other bodies which the scales contain.

Its chief value arises from its high melting point, which is said to range as high as 80° to 90° C. Hence it is employed in many ways—to harden beeswax and stearine in the manufacture of candles, to wax floors, to insulate electric wires, etc.; it is also used by furniture-polishers and brass-finishers in putting an extra polish on their wares.

The qualities vary from light brown, greenish-grey, to pale yellow; also the prices, from 40/- to 80/- per cwt. respectively.

Apply to C. Windschuegl & Co., 1 Leadenhall Street, E.C.

Carne Liquida. — The liquid meat extract, as invented and prepared by the Uruguayan chemist, Dr. Valdes Garcia, in which he combines the qualities of extract of meat with the nourishing properties of the meat itself. The great bulk of the liquid meat extracts on the market are obtained through this source. An immense quantity is manufactured, but, so far, the secret of production remains with Dr. Garcia, and he takes care to guard it.

Carob Beans.—See *Locust Beans.*

Carolina Rice. —(See also *Rice.*)—This rice, raised on the low, marshy grounds of South Carolina, U.S.A., is unquestionably very superior to any brought from any part of India. It was first raised in South Carolina from seed

taken from Madagascar about the end of the seventeenth century. It is very broad and short, and usually very much broken up. It is very mucilaginous, and boils softer than Patna; but very little of this excellent kind now leaves America, selected Patna, Java, and other East Indian rice, worth only about half the price, being often sold as Carolina in this country.

Of course, the sellers render themselves liable to very serious penalties, under the Merchandise Marks Act. Some try to evade the Act by selling the substituted article as of the "Carolina kind," which, of course, is not Carolina at all. Genuine Carolina comes mostly to Liverpool, but cannot well be retailed at less than 5d. or 6d. per lb.

Carolina Tea. — Made from the leaves of *Ilex vomitoria.*

Carpet Soap. — The best known and most reliable article in this line is *Sadler's Marvellous Carpet Soap.* Sells at 4½d. and 8d. per bar. Packed in 14lb. boxes; to cost 7/-, sells for 10/-. From usual agents, or the Depot, 160 North Street, Brighton, Sussex.

Carrageen. — The proper name for Irish Moss, a well-known alga or seaweed, *Chondrus crispus*, which abounds at the town of Carragaheen, near Waterford, and about Sligo, in Ireland. It grows far down on the rocks, and is only uncovered at low spring tides. It is a deep rich green when gathered, but when washed, dried, and bleached by sunlight, it turns to a yellowish-white or straw-colour, horny and translucent. It has valuable emollient and demulcent properties, containing 63 per cent. of *carragheenin*, an agreeable jelly-like starch, but not a particle of gelatine. It is popularly known as *Irish Moss*, and is used in invalid cookery, making soups, blanc-mange, etc.

Characteristics of best quality.— Foliaceous, crisp, smooth, whitish, odourless, tasteless, mucilaginous. A strong decoction gelatinises on cooling. It possesses adhesive and stiffening powers, and dries down on the fibre, which it will not injure, nor change sensitive colours.

The same kind of moss is also found on the coast of Massachusetts and at Hamburg.

Half an ounce soaked for ten minutes in three pints of water, then boiled, strained, and flavoured, yields a very pleasant drink; or if sugar and milk be used instead of water, a pound weight of stiff jelly or blanc-mange is produced.

Carrageen is fed to cattle in times of scarcity. For feeding calves, wash 1lb. of dry moss in cold water, then boil 3½ or 4 hours, and when lukewarm strain and mix with bran or milk. For cattle or pigs, boil 1lb. of the moss in 10 gallons of water, and when cold, mix with oatmeal, barley meal, or Indian meal; for horses, with cut straw or hay. It is also made into size for thickening calico, and employed as stuffing for mattresses, etc.

"New seasons" crop cheapest and most plentiful latter end of August. Prices, 15/- to 25/- per cwt.

Carraway Comfits. — See "*Comfits.*"

Carraway Essence and Oil. — The oil is colourless or pale yellow when new, has an aromatic and somewhat acrid taste, but it turns darker with age. Its value depends on the amount of *carvol* it contains. Frequently adulterated with oil of cummin.

It should have a density of at least 0·910 at 15° C., not more than 15 per cent., should distil over below 185°, and 55 per cent. should come over above 200° C. The rotary power varies from 79° to 80°.

If kept long, a plenol is formed; and to this is due the blue colouration given by ferric chloride.

Carraway Essence is commonly made by mixing about ¾ oz. of the oil with 12 ozs. of rectified spirits.

Carraway Seed (often spelt Caraway).—F. *Fruits de Carvi, Cumin des Prés;* G. *Kümmel;* It. *Carvi;* Port. *Alcaravie;* Sp. *Alcarabea;* W. *Garddy.*

The deep brown seed, or more correctly the mericarp, of the small umbelliferous plant *Carum carui*, growing wild in some parts of Europe, but largely cultivated in Germany, Holland, etc., and in our own counties of Essex, Kent, and Suffolk. The plant is a biennial, grows 2 or 3 feet high, with pinkish white flowers and has a tapering root like a parsnip, but much smaller. This root, when young, is good eating. The seeds are oblong, pointed at both ends, thickest in the middle, striated on the surface, and more or less crescent shaped, with a strong aromatic smell and warm pungent taste.

The German and Dutch, of light blue-brown colour, are larger, but the English is most esteemed. The Bohemian, Polish, and Russian seeds are ordinarily of blackish colour and small grain, and often mixed with dirt and *débris* of the fruit-stalk. About 1,000 tons of these are imported yearly, *viâ* Holland. Occasionally a large pale variety is imported from Mogador, and is about half as long again as the English.

"*Drawn*" *Carraways.* — The exhausted seeds after the oil has been expressed; value about 1d. per lb., but often mixed with genuine or ground seed. The drawn seeds are much darker in colour, and, of course, lack the volatile oil and the pleasant aromatic smell of unexhausted seeds.

Carraways of low dark colour may be much improved by damping them, and submitting them on trays to the fumes of burning sulphur in a close chamber, or other similar contrivance.

Carraway seed is used in medicine as a carminative, and as a spice to flavour liquors, cordials, bread, cakes, confectionery, etc.

Carraway comfits or *Scotch Carvie* are these seeds coated with sugar and generally coloured pink or white. It should be chosen new, large grained, bright coloured, free from dust, and of strong agreeable smell.

Apply to Hedley, Gamble, & Crosfield, Circus Street, Liverpool; or to Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool.

Carrots.—F. *Carottes;* G. *Carotten, Mohren, Gemeine Cahre, Gelle Rube;* It. *Carota;* Lat. *Daucus Carota;* Port. and Sp. *Zanahorias;* W. *Moron cochion.*

These are next in importance as vegetables to onions and potatoes; they grow wild in the countries around the Mediterranean, and are now cultivated in most parts of the world. They are of biennial growth and native of Britain. Large quantities are grown in Suffolk. In Germany they are sometimes cut up into small pieces and roasted and then used to make a drink instead of coffee. New English carrots come into the markets about June; but considerable quantities of small young ones done up in bunches arrive from France in April. Price 6d. to 1/- per small bunch. Carrots, potatoes, beets, and parsnips keep best in a cellar on dry earth or sand, and when fully grown. Those beginning to sprout should be used first.

As food, carrots are somewhat indigestible, but are heat-giving, and much used for flavouring soups, stews, and sauces. They contain 89 per cent. of water and 4·5 per cent. of sugar.

As an ornament, the upper part of the root is occasionally placed in a hyacinth glass with water, and the young leaves sprouting out green and fresh are very pretty.

The garden carrot was first introduced into this country in the reign of Elizabeth, and ladies used to wear the elegant and graceful leaves of the carrot in their hats instead of feathers; and even as a food it was cooked in greater variety of ways than at present. The leaves were commonly used as "greens." Carrots are more popular in France than in this country, and enter into a large number of dishes. Syrup, jam, and wine are sometimes prepared from carrots; they can also be fermented, and used in beer instead of malt, and in distillation they yield a considerable amount of spirit. The best carrots are of light red or yellow colour, of conical shape, sweet, and crisp. Young carrots are more tender and preferable for the table, and are in season from April to June. The small dwarf carrots, so much

esteemed by gourmands and resembling overgrown radishes, come from France. (See "CRECY.")

Carrot Soup. — (See *Purée*, or *Potage Crécy*.)

Carvie, or **Carvie Comfits.** — Scotch names for Aniseed or Carraway Comfits—seeds preserved and coated in sugar and dried. (See "*Comfits*.")

The word *Carvie* is properly the name for a variety of bastard or Vosges aniseseed. It used to be sold by grocers, but is seldom met with nowadays, and the other seeds named are substituted. Carvie seed is, however, used in the preparation of certain liqueurs, such as *Kummel*, also in some kinds of German biscuits.

Cascara Sagrada. — (Sacred Bark) —A tonic purgative, from the bark of *Rhamnus purshianus*, a species of buckthorn.

Cascarine. —A proprietary food made from maize.

Casein. — F. *Caséum*, or *Caséine*.

The solid part, curd, or nitrogenous constituent of milk, and out of which cheese is made.

Cashew, Caju, or **Acajou Nuts.** —Du. *Catsjoenooten*; F. *Noix d'acajou*; G. *Akajunüsse*; It. *Acaju*; Port. *Noces d'Acajou*; Sp. *Nueces de acajou*.

A kidney-shaped nut, about an inch long, the produce of a tree called *Anacardium occidentale*, which grows in South America and the West Indies.

Along the sea shores of Western India the cashew-nut tree is the predominant tree of the woods in the neighbourhood of towns and villages.

In Makualand, East Africa, the trees are very extensively cultivated by the natives, and a very strong spirit, called *Arripa*, is distilled from the fruit. The cashew tree is very like a walnut tree, and the leaves—broad and large—have a similar smell. It has very little bloom, and the bluish shell-like nut, which is the only part that will keep good for exportation, grows out at the top of a large fleshy pear-shaped fruit or swollen stalk. The kernel, forked like that of a walnut, is in a very hard double shell, between the layers of which is a black oily juice, so acrid and caustic that if touched by the lips or fingers it sometimes burns the skin and causes blisters.

This acrid property is, however, neutralised by heat, and the kernels are then eatable and of very pleasant taste. Not only is the roasted kernel edible, but also the pear-like enlargement of the floral receptacle. In the tropics the nuts are commonly used in cooking, and greatly improve the flavour of chocolate. The oil is used as an indelible marking-ink for linen. In England the kernels of cashew nuts are often sold in bottles, and used at dessert after being well roasted. Cashew stones are largely used in German confectionery; and the nuts make capital monkey heads for dolls.

Cashmere Chutney. — (See also *Chutneys*.)—An Indian condiment, very hot and sour, composed of sliced fruits and spices.

Cassareep. — (Also called *South American Cassaripe*.)—A West Indian sauce made from the expressed juice of the Cassava or *Manihot* root (see both), concentrated and freed of its volatile poisonous properties by heat and exposure, to the consistence of treacle, and flavoured with pepper, cinnamon, and mace. The scum is carefully removed during the process. It is used as a condiment in the West Indies and in making sauces. Some travellers from the West Indies (Mr. Davitt among others) say that much of the cassareep is prepared by natives chewing the plant and expectorating the juice.

This juice when freshly obtained is highly poisonous, and has to be well boiled to render it innocuous.

Importers.—The Pure Cane Sugar Co. (J. Philip & Co., agents), 4 Fenchurch Buildings, London, E.C.

Cassava. — F. *Cassave*. (See also *Mandioca*, *Yucca*, etc.)

A West Indian name for the shrub *Manihot utillissima* and its congeners, largely cultivated in many tropical

countries for its valuable products, such as Tapioca, Cassareep, Onycou, and Farina.

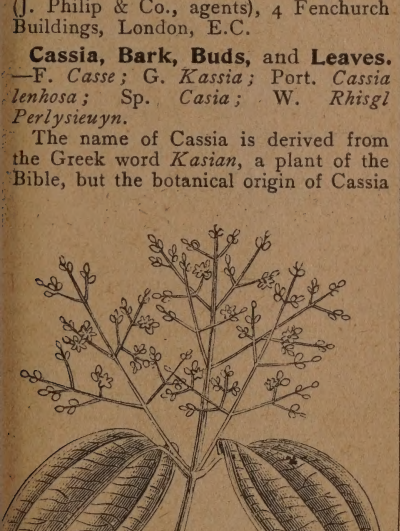
The bitter and some of the sweet Cassavas contain a poisonous amount of hydrocyanic acid, but, by exposure to light and air and drying, the poison is decomposed, and the edible substance becomes quite harmless.

In Florida it has been found to yield a larger percentage of mercantile produce than any other of the bulbous plants, say, 30 to 40lbs. to the root, and 3,000 roots to the acre. This equals about 45 tons. When dressed the root produces about 30 of syrup or glucose, 40 of starch, and 10 per cent. of tapioca.

Importers.—The Pure Cane Sugar Co. (J. Philip & Co., agents), 4 Fenchurch Buildings, London, E.C.

Cassia, Bark, Buds, and Leaves.—F. *Casse;* G. *Kassia;* Port. *Cassia lenhosa;* Sp. *Casia;* W. *Rhisgl Perlysieuyn.*

The name of Cassia is derived from the Greek word *Kasian*, a plant of the Bible, but the botanical origin of Cassia



CASSIA.

Lignea of commerce (Cassia Bark) has long been involved in considerable mystery and uncertainty. Many grocers and spice merchants and others who ought to know better have been content to imagine it the outer bark of the common cinnamon tree, but such is not the case; for the trees, although both of the laurel order, differ in many particulars. The bark of the Cassia tree is thicker, rougher, denser, less quilled, breaks off shorter, and is not so agreeable in flavour or perfume as the produce of the sister tree. Powdered cinnamon is an astringent medicine in diarrhœa. but powdered cassia has no such property. Some varieties of Cassia are grown in Java and other East Indian Islands, but the bulk of the cassia sold in England comes from China, *viâ* Canton. It is grown in districts where Europeans are not settled, and have rarely visited. The Chinese have long managed, with their usual shrewdness, to keep its cultivation and curing processes to themselves.

The subject having long excited a keen interest in scientific and commercial circles, it was decided in 1882 between Lord Kimberley, then Secretary of the Colonies, and Sir J. D. Hooker to send up to the Cassia districts Mr. Ford, head of the Botanical Department at Hong-kong, for the purpose of gaining information, if possible, and reporting on the subject.

Mr. Ford proceeded up the West River, Sai Kong, in the month of May, and, besides much interesting information, brought back with him about 1,700 young Cassia plants from the districts of Loting and Lukpo, in the Kwangtung Province, and Taiwa, in the Kwangsi Province, with the view of distributing same in any places suitable for Cassia cultivation. The only tree from which cassia bark, buds, and leaves of commerce are obtained in China, appears to be the *Cinnamomum Cassia Blume* (Yuk Gwai she), a medium-sized, stiff, ornamental tree, growing 20 to 40 feet high, if allowed, and with a trunk about 3 feet in circumference. But few trees attain this height. The plants are raised from seeds, and the tree has not been met with in a wild state; and like most of the order Lauraceæ, to which

cassia belongs, the seeds must be sown very shortly after they mature, or otherwise they rapidly lose their vitality. They are sown as they ripen, from February to April, at about three inches apart, in drills two inches deep and one foot apart in beds prepared beforehand in the open air, each bed about six feet wide and any length desirable. The beds are raised about nine inches above the surrounding ground. In about three weeks the seedlings appear above the ground. These only require an occasional watering till ready for transplanting a year or two afterwards into the permanent plantations, which must be on the hillsides. The plants, being lifted from the seed beds with a portion of the long tap root, are arranged 3 feet apart, and any gaps caused by the decay of trees in the older plantations are also filled up with young plants.

When the trees are about six years old the first crop of bark is obtained. The season for barking is March, April, and May, but after that time the growing bark loses its aroma, and is not, therefore, gathered. The branches, which are about an inch thick, being cut to within a few inches of the ground, are carried to houses or sheds in the vicinity of the plantations. All the small twigs and leaves being cleared off, a large bladed knife, with the cutting edge something like the end of a budding knife, is used to make two longitudinal slits and three or four incisions, at sixteen inches apart, round the circumference through the bark. The bark is then loosened by passing underneath it a kind of slightly-curved horn knife, with the two edges slightly sharpened. Pieces of bark 16 inches long and half the circumference are thus obtained. The bark, after its removal and while it is still moist with sap, is then laid with the concave side downwards, and a small plane passed over it and the epidermis removed. After this operation the bark is left to dry for about twenty-four hours, and then tied up in bundles about 18 inches in diameter and sent in to the merchants' houses in the market towns.

Cassia Leaves.—The leaves, which are cleared from the branches that are barked, are carefully preserved and dried, and afford by distillation cassia oil. A large quantity of leaves are sent to Canton where the operation of distilling is performed.

Cassia Twigs.—These are removed from the cut branches at the same time as when the leaves are obtained. They are a marketable commodity for native uses.

Cassia Buds.—Cassia buds, about same size as small peas, are the immature fruits. They are gathered when about one-eighth grown, and have a rich flavour nearly equal to cinnamon. Buds, and the seeds which are annually required for sowing, are obtained from trees ten years and upwards of age, that are left standing at about fifty and a hundred feet apart amongst the trees which are cut down every six years for their bark. These seed-bearing trees are not cut unless there is a demand for the very thick bark on their trunks, when some of the trees which can be conveniently spared are scorified.

New season crop usually reaches Canton in the month of May. The yield of bark per acre is about 1,500lbs. per acre, but as the bark can only be obtained once every seven years, the profit after cutting, peeling, scraping, and packing, Chinese dues and rates, cost of freight, etc., cannot be a large one. Bark on old trees about ⅛ inch thick, burnt umber colour, and almost covered with lichens; bark on six years old trees and branches 1-16—1-12 inch thick lighter in colour than the older bark. Fruit very dark purple. The bark leaves, and incipient fruit—"buds" of commerce—taste strongly of cinnamon, the strongest taste being in the "buds" next the leaf peduncles, then the bark, and lastly the leaves. The older the bark, the more pungent the taste.

The best cassia is that which is thinnest, lightest coloured, and most like cinnamon in flavour. The small and broken pieces are the cheapest. Chinese Cassia bark is occasionally

adulterated with an inferior variety (*C. Burmanni*).

Calabar Cassia is also a rather inferior kind, darker in colour, thicker and coarser.

Annum Cassia, miscalled in the United States *Saigon Cassia* or *Saigon Cinnamon*, is really produced in the wildest parts of Annam, and not in Saigon (Cochin China). Very little is known about it, and there is no evidence of cultivation, and it is mere assumption that the tree is *Cinnamomum Cassia*. The bark, however, seems distinct enough from the cassia bark of South China. It occurs in straighter and smoother quills. It has none of the corky layer removed, but has a sweeter and more pungent taste than ordinary cassia, and most of this goes to the United States.

Ground Cassia is ordinarily made up as follows:—(1) Take 2 parts cassia lignea, 2 parts bale cassia, 1 part cassia buds, and 1 part wheat flour; (2) take equal parts of cassia lignea, bale cassia, and lignea vitæ sawdust. Ground cassia is occasionally adulterated with ground ginger.

Cassia Lignea is usually sold tied up in 1lb. bundles (which are not always packed the same inside as outside), and exported in half-picul cases, resembling tea chests and containing about 67lbs. each. Cheaper sorts are exported in bales.

Cassia is used in America and on the Continent for sweetmeats, chocolate, soups, and cooking purposes, and is taken largely with sugar and boiled rice, stewed fruits, etc. It also forms a staple in *Cassia Cakes*, and is used for mixing with rye bread—all on account of its sweet aromatic flavour; whilst here it forms the basis of ground spice, and is used for mixing with cattle foods.

Cassia bark reaches Canton and Hong Kong by steamer and junk. During 1896 the exports from Canton were:—

	Piculs.		*Taels.*
Cassia Lignea ...	3,333	value	33,432
,, Twigs ...	9,065	,,	6,040
,, Twig Bark	11,820	,,	25,457

and from Kowloon, during the same period:—

	Piculs.		*Taels.*
Cassia Lignea ...	70,138	value	490,966
,, Broken ...	3,676	,,	12,865
,, Twigs ...	2,386	,,	1,731

Thicker barks are distinguished by the Chinese as cinnamon, but Mr. Ford says this bark is simply the thick bark of very old (cassia) trees of the same species, and this is correct as regards the cinnamon produced in Kwangsi and Kwangtung. The latter province exports three times more cassia than the former.

The market town of *Ta-wu*, in the P'ingnan district, is the great centre of the trade, but there is a powerful "ring" in Canton that controls the whole business.

Cassia Oil. — Distilled from cassia leaves, buds, or bark, the former yielding about 1 per cent., but the latter scarcely so much. It has a sweet burning taste, with aromatic and fragrant flavour. When new it is of a golden yellow colour, but turns brown with age. It is considered a good specific for influenza. Often sold for oil of cinnamon, which it somewhat closely resembles. An inferior oil of cassia has also recently come into the market, which, although said to be pure, and having the external appearance and character of oil of the best quality, yet it contains only from 45 to 55 per cent. of cinnamic aldehyde instead of 85 to 95.

This aldehyde, being the most important constituent of cassia oil, should be made the main test of quality.

Cassis.—A French name for black currants, also for a home-made cordial, sirop, or liqueur, obtained by infusing the berries in brandy or other spirit for several months, and then sweetening and thickening the juice with sugar or glucose. The ordinary alcoholic strength is 25 to 28 per cent.; if more, the flavour is spoilt. It is a very popular drink with the people of Brittany; and most of the black currants

grown in France are used in this way, very few being made into jam or jelly. The Cassis de Dijon has a great reputation.

Caster Sugar. — See *Confectioners' Icing Sugar.*

Castile Soaps (pr. Cast-eel.) (also known as *Marseilles*, *Venetian*, or *Olive Oil Soaps*, and formerly called *Castle* or *Spanish Soap*) are either white, mottled, or powdered. They are usually superior and expensive kinds, first made hard with soda (cheap olive oil and water, or sometimes poppy, cotton, or other seed oil is added so as to render the product less hard). They are generally dry, inodorous, horny, and are pulverisable when warmed.

The *white*, which contains about 21 per cent. of water, is of a pale greyish white colour. This is said to be the purest, and is often used in medicine to form mild aperient pills. It should impart no oily stain to paper, and be free from rancid odour.

The mottled or marbled varieties are coarser and inferior to the white, contain more water, a larger proportion of free alkali, and a lower quality of fat. They are marked or veined by means of a small proportion of either iron, salts, or ultramarine being added to the boiled soap while in a semi-fluid state, and before it cools, merely to beautify them and gratify an old fancy (see *Mottled Soap*).

Powdered white Castile soap resembles wheat flour, and is often used in making furniture polishes, etc.

For any of these Soaps, apply to:— C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Castor. — A scent obtained from the secretions of the castor-beaver, but now almost obsolete in the perfume trade.

Castor Beans.—Same as *Castor Oil Nuts.*

Castor Oil. — F. *Huile de Ricin*; G. *Ricinusoe*; It. *Olio di Ricino*; Lat. *Ricini Oleum*; Sp. *Aceite de Ricino.*

A fixed oil obtained from the seeds or beans of the castor oil plant, *Palma Christi.*

It is now cultivated throughout India in two varieties.

In Egypt the bush attains the proportions of a small tree, and produces much oil, especially in Fayoum. Castor oil is commonly heavy, thick, and viscid, of a light amber colour, and with a somewhat nasty smell and sickening taste. It has a greater viscosity than any other oil; solidifies at about 18° F., and has a specific gravity of about ·969 at 12°. The seeds (called in Singhalese, "*Ameneka*") are first cleaned from the dust and capsules, then warmed to "blood heat," bruised between rollers, and then pressed cold in hempen bags. The oil which exudes is allowed to stand to settle, or it is clarified. This quality is of a fine light yellow colour, and called *cold-drawn* castor oil. A secondary quality is afterwards got by steaming the same seeds and again straining them. This product is then heated to 212° to separate the albumen and other impurities, but it remains greenish, is not so rich, and is liable to turn cloudy and to thicken in frosty weather. The cake or refuse remaining after expression of the oil is called "*pomace*," and is used in the manufacture of fertilisers. A bushel of seed, costing about 5/-, makes two gallons of refined oil, and the pressing costs about 1/- a bushel, and the oil realises 2/6 to 6/- a gallon. Like other vegetable oils, castor oil may be either partially bleached or completely decolourised by exposing it to the action of the sunlight, when it slowly becomes pale in colour and finally colourless. Several wholesale druggists have framework arranged outside the roof of their warehouses for this purpose. The oil must, however, be kept in stoppered bottles, for if exposed to the air the oil soon goes rancid.

Castor oil is liable to be adulterated with cheaper oils, such as croton, linseed, colza, cottonseed, poppy seed, and especially resin oil, which latter has a density higher even than castor oil.

Castor oil, both French, Italian, American, and East Indian, is extensively used as a most convenient and mild purgative, although, strange to say,

the actual purgative principles have not yet been identified with certainty, but are attributed to ricinolic acid and ricinelaidic acid. Dose, ½ oz. to 1 oz., often taken in water, gin, peppermint water, or weak lavender water. It is also used by dyers to fix colours; some 150,000 gallons are thus used in Scotland annually for Turkey-red dyeing. Nearly 2,000 tons of castor oil are imported yearly, about two-thirds from India and the rest chiefly from Italy. The lower qualities are used by soap makers in the manufacture of transparent soaps, and large quantities are used for lubricating purposes. As lubricants, castor oils are considered very good when judged by their viscosity alone, but the lower grades contain too much free acid, and are likely to cause greater corrosion of metal bearings. It is also used in the manufacture of Dutch cheese, butter, etc., and is frequently an adulterant of olive oil, 15 or 20 per cent. of castor oil in the latter not being recognisable by taste; in fact, strong, rancid olive oils appear to be sensibly improved by such an addition. Castor oil is imported chiefly from Bombay, in tins, barrels, hogsheads, and duppers, and classified as *Finest Tasteless*, *First Pressing*, *Second Pressing*, *Bleached*, *Yellow*, and *Seconds*. It is the best lamp oil they have in India, and gives an excellent white light, with but little soot—almost an imperceptible amount—which quality no other oils possess. The pure oil can be taken without tasting it by rinsing the mouth before and after with vinegar, and then chewing a coffee berry. Castor oil which has become acrimonious and nasty by long keeping may be greatly improved by mixing it in hot water, shaking well, and then, after it has stood a short time, pouring it off.

Importers and merchants.—F. Newbery & Sons, 27 and 28 Charterhouse Square, London, E.C.; C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Castor Oil Nuts or **Beans.**—F. *Graines de Ricin*; G. *Purgiernüsse*; It. *Manteche*; Port. *Carrapatos*; Sp. *Catapucia Mayor*, *Chervas*.

These are the seeds or beans of the *Palma Christi* or castor oil plant (*Ricinus communis*). There are numerous varieties, but they may be classed under two main types. The *Palma Christi* is a tall bush or tree growing wild as a perennial about 30 feet high in the East Indies, and is often used as a hedge-plant. It yields large seeds with abundance of oil, but of inferior quality, whereas the cultivated plant is an annual, yielding smaller beans, but a finer quality of oil. It commences to yield beans about 10 months after the seed has been planted. In France it is also cutlivated as an ornamental plant in gardens, and around Nimes it is grown for its oil. The castor oil plant, although a native of East India, is now grown in most warm countries. Flies, and most insects, even locusts, as well as birds and the smaller animals, seem to have a real antipathy to this plant, and always avoid it as a pestilence. Large quantities are raised in Senegal and in the Western States of America, particularly Kansas, Illinois, and Missouri; St. Louis is a great centre for the beans, oil, and cake. The seeds are usually planted in rows or lines like Indian corn, about 2,000 plants to the acre, and these are grown six or ten feet high. The leaves are large and broad, but there is not much flower, and the smooth and marble-streaked beans or nuts which form in large clusters at the top of the plant grow three in a pod. An acre may yield 20 to 30 bushels, and each bushel will yield about 2 gallons of cold pressed oil (see *Castor Oil*).

In India the processes of extracting the oil are very primitive, but in Kansas City and Belleville, America, and some other places it is done by very powerful hydraulic machinery, the nuts being first carefully washed, and afterwards submitted to a pressure of 7,000lbs. to the square inch. The whole bean is never used medicinally, as it contains a poisonous element which has to be got rid of. (The name, castor oil nuts, is often wrongly applied to *Ground Nuts*.)

Castor Sugar.—Should be spelt *Caster* sugar.

Castoria.—A preparation of castor oil, widely advertised in America, and professedly inoffensive to the taste or smell.

Catalan Wine.—A wide term simply meaning any of the wines of Catalonia, in Spain, of which there are many cheap varieties, mostly red, and sold under different names. They may be had on the spot from 6d. a gallon upwards, and are mostly shipped from Barcelona to Tarragona.

Catawba Wines.—These are American products, both still and sparkling. Considered the choicest kind of wines made in the United States, and have been highly eulogised by Longfellow.

Cat Salt.—A name given by salt-workers to a very beautiful granulated kind of common salt. It is formed out of the bittern or leach-brine which runs from the salt when taken out of the pan. When the common salt is taken from the boiling pans it is put into long wooden troughs with holes bored at the bottom for the brine to drain out; under these troughs vessels are placed to receive this brine, and across them small sticks, to which the cat salt fixes itself in large and beautiful crystals. It contains some portion of the bitter, purging salt, is sharp and pungent, and is white when powdered, though pellucid in the mass. Large quantities of this salt are used in the manufacture of hard soap.

Catechu, Cutch, or Kuth.—The latter are native abbreviations of Catechu (pronounced Kat'-e-coo), a brown, inspissated extract from the wood, etc., of several species of the acacia plant in India; but in commerce, "*cutch*" is a superior quality, breaking freely like toffee, while "*catechu*" is a coarser and tougher kind, requiring to be chopped with an axe. It is used chiefly by dyers as a source of tannic acid, also in medicine as an astringent.

Catsup.—See *Ketchups*.

Cattle-foods.—(See also *Feeding Stuffs*.)—A typical cattle food (spiced) is made as follows:—6 cwts. locust bean meal, 10 cwts. Indian meal, 3 cwts. linseed-cake meal, 40lbs. sulphur, 40lbs. saltpetre, 30lbs. common salt, 20lbs. fenugreek, 10lbs. gentian, 5lbs. sulphate of iron, 4lbs. anise seed, 3lbs. ginger. All the ingredients should be of sound quality and finely powdered. Total, 20 cwts. 1 qr. 12lbs.

Cattle-spice.—The following are ordinary examples:—

(1) 16lbs. oil-cake; 1lb. each of gentian-root, liquorice-root, and fenugreek; ½lb. each of common ginger, nitre, aniseed, coriander-seed, and sulphur; ¼lb. Peruvian-bark. All are mixed thoroughly in a ground state, and the ground oil-cake added last.

(2) Equal parts of aniseed, ginger, liquorice, turmeric, and pimento. All ground and well mixed.

(3) 1lb. each of gentian root, cumin, fennel, anise, coriander, grains of paradise, African ginger, liquorice, dried sulphate of iron, flowers of sulphur, long pepper, carraways, fenugreek, and salt—all in coarse powder. Mix the above thoroughly with 7lbs. locust bean meal.

(4) 3lbs. carraway-seed, 6lbs. each of cumin seed and best turmeric, 1lb. common ginger. All ground and well mixed.

Apply to Roger Errington, Victoria Mills, Sunderland.

Gardner's patent "Rapid" Sifter and Mixer, freely used for above. Prices from 50/- to £100. Catalogues from Wm. Gardner & Sons, engineers, Gloucester.

Cauliflower.—F. *Chou-Fleur*; G. *Blumenkohl*; It. *Cavolfiore*; Port. *Couveflôr*; Sp. *Coliflor*; W. *Cawl*.

A variety of the common kale or cabbage, identified as *Brassica oleracea*. The deformed inflorescence or head is only used. It is rich in albuminoids and phosphates, very nutritious, and much more tender than broccoli, with which it is often confounded, but the two are distinct. Cauliflower is easily injured by frost, whereas broccoli will endure a very hard winter. In England cauliflower is grown most in Cornwall, Devon, Channel Islands, and about

London, but for pickling purposes thousands of hogsheads of the heads come in saltwater from Holland *viâ* Amsterdam and Rotterdam every year.

Early cauliflowers arrive February to April from North of France and Channel Islands. French growths mostly come from St. Malo, near Cherbourg, large quantities being cultivated about Morlaix, Brest, and Roscoff, in Brittany, but the largest go to Paris.

The best have large white compact heads; any tinge of yellow or green indicates inferior quality. Small dark or soft spots betray age and decomposition, and are often cut off by the sellers.

Nearly all pickle-bottlers dye cauliflowers yellow with turmeric, which, however improving the colour, gives a nasty musty taste to the pickles.

For vegetables and pickles, apply to Allen Jeeves & Sons, Seddington, Sandy, Beds.

Caustic Soda (L. *Sodium hydrate*) is made by mixing crude carbonate soda with boiling water and then pouring on slaked lime.

Cavendish Tobacco or **Negro Head.**—An American production which has been softened and sweetened with molasses or syrup, and moulded into quadrangular cakes for chewing or smoking. The best is from the Virginian leaf, with or without flavourings, which is usually sweated a day or two to deepen the colour. Each of these compact masses is next separately wrapped in selected leaves, and is again pressed in powerful steam presses. *Cut cavendish* is the same tobacco cut into fine shreds.

Cavendish is imitated by English manufacturers, but this is generally very hot and bitter, also deficient in the aroma and flavour of the genuine American. This is accounted for by the limited choice of first-class leaf, so essential in producing fine light coloured kinds of cavendish. *Black cavendish* or *Negro-head*, like spun tobacco, affords a disguise for all kinds of stuff—good and bad.

Caviare (pr. *cav'-yar*). — Da. *Caviar;* Du. *Kaviaar;* F. *Caviar;* G. and Sw. *Kaviar;* It. *Caviale;* Port. *Ovas escaladas;* Rus. *Ikra;* Sp. *Caviario, Cabial.* (See also *Botargo.*)

A condiment largely used by rich and poor in Russia. It is prepared from the dried spawn or salted roe of fish. The genuine is made from the roe of the sturgeon, especially the white sterlet species, a single fish yielding as much as 120*lbs.* of roe. It is, indeed, the chief product of the *Accipenser huso.* A cheaper and less prized red kind is from the grey mullet, or some of the carp species.

Caviare in its finest condition is grey, pearly, succulent, and delicate; but most of that met with in England is black, herring-flavoured, and small-seeded. It is as different from the article in Moscow as is a shadow from the substance.

The roes are first washed in vinegar, and then salted. Sometimes they are put into a bag with a strong brine and pressed by wringing, then dried, and put into casks or cisterns perforated at the bottom, where they are pressed by heavy weights. The inferior sorts are often trodden with the feet.

In the Volga district the white sturgeon leads for the high quality of its roe, and next comes the common sturgeon.

When a stranger is admitted into the fishing section where Caviare is prepared, he finds it supplied with a number of troughs, wooden tubs, and vats, and a stand looking like a bench, with upper frame open, on which is placed the freshly salted caviare in order to separate it from the superfluous brine. There is also a very important implement—the caviare press—with which the "pressed caviare" is prepared. On the walls hang the caviare sieves or wooden frames and nets of strong cord.

The workmen separate the caviare from the egg bags in which it is enclosed, by rubbing it with the hand through a sieve into a vat. The egg skin does not go through, but remains on the surface of the sieve. When fish are in the first

stage of decomposition, the egg skins get so fatty that they cannot be separated from the roe, and from these the low grades of caviare are made.

Next is the salting of the caviare. It is salted only with brine made of fine salt, which is carried in bags all the way from the Lake of Bardymkul, in the neighbourhood of Chodjent, in Ferghana, Turkestan. This salt is obtained by dynamite explosion, and is of superior quality to any salt produced in England. The difference in "fresh" caviare is caused by the smaller or greater quantities of salt contained in the brine, and this is regulated to meet the length of time the caviare is intended to be kept. The fresh brine is kept in large wooden tubs, and the fine clean salt used for the preparation of the brine is put into small bast barrels. The superfluous brine is used again. Immediately after the eggs have been rubbed through the sieves, they are put through the brine, and, as soon as they are deprived of the superfluous brine, they are put into tin jars or cans and small wooden kegs; and the so-called "fresh caviare," which is high-priced, is ready for market. The cheaper kind is first cured in the brine, then put into linen bags and pressed. This is called "pressed caviare."

A large trade in caviare is carried on on the Caspian Sea, the Volga, and its affluents, over a million pounds being exported annually from Taganrog and Astrakan. The greater part of it goes to Turkey, Greece, Italy, and Germany; only a little to England, and still less to France.

A good deal of both lake and river caviare, salted with German salt, is now prepared in the United States and Canada, chiefly at the Delaware River, Georgetown, Chesapeake Bay, the Fraser and Columbia Rivers, Lake Superior, and the Lake of the Woods; these makes are largely exported to Germany, through Hamburg. Some 4,000 or 5,000 kegs of about 140lbs. each are shipped yearly, nearly half of the export being consumed in the cheap restaurants of Berlin, and the finer quality in Austria, Italy, England, and other European countries.

The Lake caviare is preferred to that from the rivers, on account of its larger roe, the latter being small and black in the river caviare. The Lake of the Woods has a total area of over 6,000 square miles, and its waters abound with fish of all kinds. The most important fish in the lake are the sturgeon, and it is these to which the fishermen devote the most attention, but it is feared that unless measures are taken soon to reduce the take the fish will be exterminated, so far as commercial purposes are concerned.

After the fish is killed and the head cut off it is carefully cleaned, the roe being set aside in tanks. When the catch has been disposed of, the roe is then taken and washed repeatedly until it is thoroughly clean, after which it is rubbed by hand through a series of screens until all the eggs are separated. That is all the process necessary. It is packed in the kegs, and kept in cold storage until the time for shipment arrives, when it is sent to London and to Germany. A number of experiments have been made with Canadian and American salts, but so far they have not proved so good as the salt brought from over the ocean. On arriving in Europe the kegs are opened, and the caviare is sorted out according to quality. It is then put up in small lead packages and tins and sold as Russian caviare. The inferior portion is often reshipped to America, where the appetite for caviare is not so exacting. In Germany the use of the Canadian product is increasing, while the supplies of the Elbe and Vistula are decreasing.

Holland also exports a little caviare, but the quality is poor.

Caviare is prepared in two ways for export from Russia.

In making *Caviar grénu* the eggs are cleaned in water to remove the outer covering, and are then left in strong brine for about 45 minutes, which is afterwards drained off.

In preparing *Caviar compact* the eggs are separated from the skin veins, etc., and then salted in a trough and left about 45 minutes in brine; but, while

there, they are kneaded in order to soften them, after which, instead of being left to drain slowly, they are twisted in cloth bags, and, finally, heaped lightly into small wooden barrels ready for delivery.

A third method consists in preserving the eggs just as they are taken from the fish, and, after lying for seven or eight months in brine, they are dried in the sun. This is a coarser kind of caviare, but largely exported.

Large quantities are made in Cura, where the people dry it in front of their houses, the smell attracting such swarms of flies that the air seems alive with them. Thousands of tons are made annually, but it is oily and not considered very digestible, and, as it is generally in a state of decomposition, it can scarcely be wholesome.

Caviare is occasionally eaten as a delicacy in this country, and, even in Shakespeare's time, it was known to a few, but not relished by many. Hence, Hamlet says of a certain play, "'Twas caviare to the general," *i.e.*, to the common people, who could not relish nor understand it. It is sold in small glass barrels and in tins, but the best is packed in small kegs, and the inferior in dry cakes.

The savoury and piquant taste of caviare, as well as its suitability for use as *hors d'œuvres*, sandwiches, and for various culinary preparations is in some countries one of the most appreciated preserves among *gourmets*.

True Russian caviare is easily distinguished by the superiority of its quality, the delicacy and freshness of the "grain," which is very loose, while British or German caviares are only a species of pulp (*bouilli*) which has lost nearly all its aroma.

The relish for caviare has to be acquired, for when first tasted it is very disagreeable, so it is only occasionally eaten as a delicacy by English people. A popular way of serving it is to spread it on dry toast, on slices of brown bread and butter, or on French roll or Vienna bread, and it is sometimes garnished with watercresses, or a little lemon juice may be squeezed over it. A person rarely consumes over half an ounce or so at once.

Cayenne Essence is prepared in various ways:—

(1) ½ oz. of cayenne and ½ pint of brandy digested 10 or 14 days and then filtered.

(2) 3lbs. of bruised cayenne pods and 1 gallon of rectified spirit. Digest 14 days, express the tincture and filter. Distil off one half, add 15lbs. of dry salt, mix, dry, and rub through a sieve, and finally fill in warm dry bottles. It is often coloured with a little vermilion or rouge.

Capsaicin, the active principle of cayenne, is so very pungent that even half a grain diffused throughout a room will set a whole party of people sneezing.

Cayenne or Guinea Pepper.—(See also *Capsicums*, *Chillies*, *Nepaul Pepper*, *Paprika*, etc.)—An extremely pungent and fiery kind of spice, originally from the island of Cayenne, but now grown in all hot countries, and largely employed for culinary purposes. It consists of the powdered pods and seeds of different species of capsicums, which are of all sizes and quite numerous, but principally of *C. minimum*, *C. baccatum*, and *C. frutescens*.

It ought to be remembered that cayenne is not really pepper at all in a true sense, the plant not being one of the *piperaceæ*.

C. frutescens, also known as Guinea Pepper or Red Pepper, yields the best sort. The pods of this species are small, scarcely an inch in length, very narrow, and of orange-red colour. They are somewhat hotter than the first-mentioned variety and aromatic, which the others are not. A quantity of this species is also cultivated around Salonica, and especially in the Canton of Karadja Abad, about Vardar Yenidje, and Vedine, in Turkey. The plant here seems to prefer a sandy and humid soil, and it grows sometimes almost in the water. Harvesting commences only when the plants are entirely red. The first gathering is the best, and the last

the worst, as the peppers redden imperfectly in the autumn.

The ruddy tint of fresh-grown capsicums soon dulls and becomes unattractive when ground and exposed to light; hence, ground cayenne, when genuine, is very dingy in appearance, and whoever chooses it from its ruddy fresh tint makes a great mistake. It is then almost sure to be contaminated, perhaps with red lead, or perhaps, worse still, with sulphuret of mercury. Red brick-dust, salt, saw-dust, mustard-cake, rice, red ochre, and turmeric have all been found in ground cayenne.

Ground cayenne if heated strongly volatilises a very acrid vapour (due to *capsaicin*) causing intense irritation of the throat. This sensation can be produced by so small a portion of cayenne that any foreign substance mixed with it can in this way be detected. It is only necessary to separate carefully, by the aid of the microscope and a camel-hair brush, all particles of cayenne, and heat the portion suspected; if no acrid vapours arise it is not cayenne. The crystalline alkaloid, called capsaicin, does not exist in the seed, but in the pericarp. The oil is called *capsicol* or *capsicin*.

Cayenne greatly improves the flavour of various foods and assists the digestion, but both this and all other hot peppers if used too frequently become injurious and induce dyspepsia. The small seeds inside the cayenne pod, or the pods themselves fed to canaries will turn the feathers from pale yellow to deep gold colour.

Wm. Gardner & Sons, engineers, Gloucester, make machines specially suitable for treating above. Catalogues free.

Cayenne, Soluble.—Used as a condiment, and is prepared by adding the strong tincture of cayenne (see *Cayenne Essence*) to common salt. The solution is then evaporated until a portion of it, on cooling, crystallises.

A little saffron, or annatto, or rouge, is generally added to improve the colour of the product, which is quite soluble, and retains the pungent taste of the cayenne.

Cedratur.—(See also *Citrons.*)—A species of citron, *Citrus medica*, growing abundantly in Corsica, Sardinia, Sicily, Madeira, and the Azores. The fruit has the shape of a pear, but is very much larger, and has a very thick and tough rind. This rind, when candied, commonly goes by the name of "Citron peel," although over double the size of other citrons, and often weighing 5lbs. to 10lbs. each. The peel is very rich in essential oil. Four different products are obtained from the cedratur, namely:—(1) The candied peel, mainly sold by grocers at Christmas time. (2) A preserve made by cutting the fruit into small pieces, and boiling in sugar like jam or marmalade. (3) A liqueur prepared by macerating the fruit in alcohol and the addition of syrup. (4) An essential oil largely employed in perfumery.

Celery and Cerleriac.—F. *Céléri*; G. *Sellerie*; Port. *Celeria*; Sp. *Apio*; W. *Bwyd-lysiau*.

An umbelliferous plant (*Apium graveolens*), a relative of the parsley family, native of Europe, and long cultivated in gardens for the use of the table. Perhaps the largest and finest is grown about Manchester.

The green leaves and stalks of the upright or Italian are used for flavouring soups, and the lower stems are blanched in the ground by packing the earth around them nearly to the leaves as soon as they begin to droop. Another way of blanching celery is by binding rough strong paper on to the heads; this method prevents the outer leaves being disfigured by slugs, and also permits of liquid manure being freely used. There are several varieties, pink, yellow, and white stemmed. *Celeriac* is the name given to a large and turnip-rooted variety. *Wild celery*, growing in ditches and on the sea coasts, is said to contain a dangerous narcotic poison.

Celery is in season during winter and spring, and will keep some time after gathering; it may be kept several months by putting it in boxes filled with earth

and storing them in a cellar. Celery is often much damaged by the larvæ of the "celery-stem fly," and a fungus known as "red rust," and "black mildew."

It should be chosen creamy-white in colour, large, crisp, solid, and nutty in flavour. Celery has long been considered an excellent remedy externally as well as internally for rheumatism.

Celery-seed in bottles is a salable commodity used for flavouring soups, but henbane seed, which is very poisonous, has been found in some preparations.

Celery oil. A new industry in Germany, is the manufacture of a strong aromatic oil from the leaves of the celery plant. This is used as a flavouring. One hundred pounds of leaves makes one pound of oil.

Celery Coffee. — See *Coffee Substitutes.*

Celery Essence.—This is made:—

(1) By digesting celery seeds in spirit for a week or ten days, and then filtering.

(2) 2 drachms oil of celery, ½ oz. carb. of magnesia, 1 oz. sugar, 8 ozs. cologne spirit, and 8 ozs. of water. Dissolve the oil in a little of the spirit, and rub in a mortar with the addition of the magnesia, then add the sugar, and colour slightly with tincture of grass.

Cement for Bicycle Tyres.—See *Bicycle Tyre Cement.*

Cement for Glass, Marble, Porcelain, and Crystal, is made of powdered glass and white of egg. Glass, in the finest powder, is mixed to the desired consistence with white of egg. Broken articles joined with this cement set so hard that they may be broken again in another part, but not where first cemented.

Cement for Jar Lids. — A good cement for fastening lids on jars is made from 4½lbs. plaster-of-Paris, 3lbs. common resin, and 1lb. caustic soda. Melt the resin and soda in hot water, and stir in the plaster-of-Paris when wanted for use. Another—Melt and mix 1lb. of resin and 1lb. of tallow. See that the lids are quite dry before sealing them on the jars. The compound sets in an hour, adheres strongly, is not permeable like plaster used alone, and is attacked only slightly by warm water.

Cement for Jewellery, etc. — Regularly used by jewellers, and known as diamond cement. It is made of gum mastic and isinglass dissolved in spirits of wine.

Cement for Rubber and Metal.—A good one is made by dissolving pulverised shellac in ten times its weight of pure ammonia. It should stand three days before use.

Cements, various.—(See also *Portland Cement.*)—Many kinds of cement are used for repairing broken glass, china, and earthenware. They are mostly made of Canada balsam, shellac, copal or mastic varnish, isinglass, india-rubber, etc. Isinglass, mixed with glue, makes a very strong cement for glass, porcelain, etc.

Melt together 2lbs. shellac and 1lb. Venice turpentine, and form into sticks of size and shape desired.

The white of an egg mixed with a little quicklime makes a useful cement for crockery.

Apply to E. Mitchell & Sons (makers of "Stick-fast" for Crockery), 5 Burnet Place, Bradford, Yorks.

Gardner's patent "Rapid" Sifter and Mixer, freely used for cements. Prices, from 50/- to £100. Catalogues from Wm. Gardner & Sons, engineers, Gloucester.

Century Plant.—See *Pulque.*

Cepes or Ceps.—A large species of mushroom common in France, around Perigord and Bordeaux.

The edible species, "Bolet-Cepe" or "Cep blanc," is *Boletus edulis;* but the "Cepe noir," *B. æreus,* is a poisonous species; and the "Cepe faux" is *B. luridus.* There is no known method of cultivating them, but "Cepes au Naturel" and "Cepes a l'huile" (pickled in olive oil), as well as Dried Cepes, are very popular with the French, and are usually sold in glass bottles or 1lb. tins at about 12/- and 18/- per doz.

Cerasin. —That portion of cherry-tree gum which will not dissolve in water.

Cereal Foods. — See *Prepared Foods.*

Cerealine. — A nitrogenous substance obtained from bran, closely resembling diastase in its power of transforming starch into dextrine sugar and lactic acid.

It is largely used by confectioners, bakers, etc. Wholesale price, 14/- to 15/- per cwt.

Cerisine or **Purified Ozokerit.**— F. *Cérésin;* G. *Erdwachs;* It. and Sp. *Ceresina.*

An artificial waxy composition, melting point 61° to 78° C. Used for making candles (see *Ozokerit*). Sometimes this mineral is artificially coloured to imitate beeswax.

Cerulean Blue.—Is properly a pigment composed of the oxides of tin and cobalt, and has the peculiar property of retaining its blue colour by artificial light.

Cette Wines.—The town and port of Cette, in the department of Herault, France, is situate on a neck of land between the Mediterranean Sea and the lagoon of Thau. It is notorious for the manufacture and exportation of imitation wines, such as Madeira, Malaga, Alicante, Chypre, Malvoisie, and others foreign to France, and these fabrications are known in commerce as "*Cette Wines.*"

Ceylon Coffee.—Ceylon coffees are largely imported into this country, but are often highly objectionable to those who have really a knowledge of what fine coffee ought to be.

Some Ceylon plantation coffees, however, are popular. They come into our markets about Christmas. These berries are very smooth, of a palish green colour, and of uniform purity, with good flavour.

Ceylon or **Jaffna Moss.**—A species of edible sea-weed, *Sphæroccus lichenoides*, native of the Indian Ocean.

It was introduced to European notice by O'Shaughnessy about 1835, and is now used as a demulcent food-jelly for invalids.

It is said to consist of 54¾ per cent. of mucilage, 15 per cent. of starch, and 7 per cent. of salts. Half an ounce boiled for about half an hour in a quart of water forms a jelly, to which wine, milk, sugar, and flavourings may be added as desired.

Ceylon is a pear-shaped island at the South of India. It is not quite so large as Ireland, but has a population of something over three millions, the Europeans numbering only about 5,000. It is very curious and remarkable how the letter *C* preponderates as an initial in all that relates to Ceylon, not only in the names of places, but in articles of produce and other things.

Ceylon Tea. — (See also *Teas, Blended Teas,* etc.)—Ceylon Teas may be said to date from 1876, when the coffee leaf disease in Ceylon induced planters to give serious attention to cocoa, cinchona, cardamoms, and finally to tea; for, although tea had been tried before both by the English and the Dutch, it is only since 1876 that it has developed so marvellously, rising as a phœnix from the ashes of the ruined coffee plantations. In the year 1880 only about 100,000lbs. were used in this country, and in 1885 3,217,000lbs., but in 1886 the consumption had risen to 6,245,000lbs., in 1887 to 9,941,000lbs., in 1888 to 18,533,000lbs., in 1889 to 28,508,000lbs., and in 1890 to 34,516,469lbs., till in 1899 the total export reached about 125,000,000lbs.

Ceylon Tea.—How produced. Tea is now the chief staple of the island, the plant flourishing everywhere from sea-level districts to the summits of hills 7,000 feet high. The plant will grow to 20 feet high, but is kept down to 3 feet high by pruning.

As a rule, the light, tippy teas (thin, and without much sap) are obtained from the young shoots, after pruning. After a field has been pruned, the bushes produce very poor teas for some time. In order to obtain a big yield, it has been

the fashion, of late years, to prune heavily—say, every two years, instead of every three or four, as previously. This produces a big yield, but the quality of the tea suffers in consequence. The best leaf is obtained from a bush that has not been pruned for some time.

Plucking is carried on continuously, not as in China, periodically. The bud and two young and tender leaves only are taken. The teas are dried under cover and not in the open air. The manufacture is as follows:—First, the fresh, green "leaf" is brought into the factory by coolies, spread out on long canvas shelves, called "tats," and allowed to "wither," or slightly dry, at the air temperature for some 48 hours. Secondly, the "withered" leaf is "rolled" in a machine-roller for an hour or so. During this operation the vegetable tissues are thoroughly crushed into a moist and juicy condition, and each leaf assumes a more or less cylindrical form. Thirdly, the "rolled" leaf is allowed to ferment in trays for a short time. Much depends on the proper regulation of this stage, because important changes take place during fermentation. Fourthly, the fermented leaf is re-rolled, and then "fired," that is, submitted to the action of a current of hot, dry air (at about 210° F.) for a certain time.

The tea is now in a manufactured state, and has only to be sorted into the different grades, and put into large bins, until enough has been collected to make a "break." Loss of weight from the green leaf to the made tea is from 75 to 78 per cent.

The characteristic of the beverage produced from tea grown in the lowlands is its "strength," and that of high-grown tea delicacy of flavour. In fact, nearly all this elevated land has now been taken up.

The plants mostly cultivated are from fine jats of Indian seed, and, owing to the soil, these yield great pungency and high flavour.

The trees do not come into full bearing until seven or eight years old; but when once planted they last many years.

Ceylon tea possesses the good qualities of both Chinese and Indian teas, and, therefore, does not need any blending, and it is probably owing to this remarkable fact that Ceylon tea has risen so rapidly in favour.

The quality of the tea produced from any particular garden can be kept pretty nearly the same as regards flavour and strength; but, of course, when the monsoon breaks there is no doubt that the tea from all gardens has not the same flavour or strength. This, however, is only for a very brief period, and is common to all the gardens, for rain-falling, after dry weather, brings on a very quick flush, and then planters have such a rush of leaf coming into their factories at once, and not having time or space to prepare it all properly, teas are often sent away carelessly rolled or sorted, and under-fired.

The keeping properties of Ceylon tea are not very good, and it deteriorates rapidly on exposure to the air, whether from being grown in a damp climate or manufactured in a different way to the Chinese seems uncertain. But the growers are making considerable headway, and owing to the personal supervision which they exercise over their plantations, to the use of machinery, and to the fewness of middlemen between producer and consumer, it is used very quickly, and before losing much of its virtue.

The names of the gardens in Ceylon are legion, but the most popular teas come from the Newera Eliya district, about 5,000 feet above sea level. It may be taken as a general fact that the higher the elevation at which Ceylon teas are grown, the better the flavour. Perhaps the four best gardens are Pedro and Monkswood, sold in Colombo; and Norwood and St. Leonard's, sold in London. Ceylon growths are more delicate as a class than Indians.

Tea planters, however, are not all "experts." Their teas are often wrongly marked, through the growers not knowing the difference between one grade and another. The teas are, in fact, frequently marked at random, and are

given high-sounding names that do not properly belong to them. Other growers lack the necessary appliances for properly preparing their teas.

Cheesiness.—The disagreeable, malodorous taint in some Ceylon and also Indian teas, recalling that of rancid cheese, is owing to green, sappy, immature or unsuitable timber being used in making the chests.

And who gets these cheesy teas? Not the large blending firms (they are too wide-awake), but the retailer, who buys small lots of unblended teas. A little of this cheesy tea will spoil a large mixing, and do irreparable damage to a family trade. (See "Blended Teas.")

Some of the growers really know very little of the quality of tea, and often send away their crop of leaves to be "made up" and packed by others. It is from Ceylon that certain fancy selections of tea, consisting of the extreme ends or "tips" of the small shoots, have occasionally been imported in small parcels, and have fetched fancy prices. In May, 1891, a small quantity from the Gartmore Estate was reported to be sold in Mincing Lane at £25 10s. per lb.; another from the Havilland Estate at £17 per lb., and in March of the same year a selection from the Gartmore was sold at £10 2s. 6d. per lb. These unique teas were of the brightest gold colour, blazing with tip, and resembling grains of gold. There is no special season for the arrival of Ceylon teas, they are coming forward all through the year; but, perhaps, the best comes down from about September to December, although the autumnal flavour is not apparent with Ceylons as with Indians, and the average prices are from 8d. to 1/3 per lb. in bond. Chests hold about 94lbs., half chests 50lbs., and boxes 18lbs.

Wholesale Dealers and Importers.—Jackson Bros. & Co., 14 St. Dunstan's Hill, London, E.C.; Spencer, Turner, & Boldero, Lisson Grove, London (see *High Caste Ceylon* and *Silver Packet Teas*).

Chablis (Wine).—One of the most popular white wines from the Burgundy district of France. It takes its name from the town of Chablis, in the canton of Yonne (Auxerre).

Somewhat more spirituous and more highly flavoured than the red wines of that locality; but the highest type of French *white* wine. (See *Burgundy Wines*).

Chalk.—F. *Craie, Blanc de Meudon;* G. *Kreide;* It. *Gesso;* Port. *Crida;* Lat. *Calcium Carbonate;* Rus. *Nigel;* Sp. *Yesso;* W. *Cialc.*

A soft, white, rocky limestone, or carbonate of lime, made up of microscopical small shells, etc. It forms part of the cliffs in the South and South-East of England, and on the opposite coast of France; also found at Meudon, and Montmartre, near Paris, and in Champagne, but nowhere else. It is 600 to 800 feet thick under the City of London. When crushed, washed, and purified it becomes *Whiting, Spanish White, Paris White*, etc. Several hard kinds of clay are called chalk, such as *Red Chalk* or *Raddle, Yellow Chalk*, etc. *French Chalk* is a scaly kind of talc or soapstone, largely used by tailors for marking cloth. *Black Chalks* are made from charcoal and from lamp-black, black-slate, etc. *Spanish Chalk* is a variety of soapstone obtained from Aragon in Spain.

The best chalk contains no flinty matter, arsenic, nor magnesia.

Chamboureau Wine.—This celebrated French wine, the best known of all the wines in the lovely Anjou district, is the product of the Chamboureau Vineyard, near Savennieres, Maine et Loire, France, also near the "Coulee de Serrant" and the "Rocheaux Moines" Vineyards, and is now the property of Monsieur Jules Chatillon, who gained considerable renown in the defence of Paris during the Franco-German war of 1870. This enterprising gentleman has lately replanted the whole of the vineyard, regardless of expense.

Chamois Leather or Skins (also called *Wash Leather* or *Shammy Leather*).—Dan. *Semslæder;* Du. *Zeem Zeemleêr;* F. *Peau de Chamois;* It *Camoscio;* Ger. *Sämischleder;* Port

Camirça; Rus. *Samschnüi, Koshi;* Sp. *Gamiuza;* W. *Math o lwdn gafr.*

Originally prepared from the skin of the Chamois goat; but the skins of sheep, kids, or common goats are now generally substituted.

"Kips," a name in India for young cows or oxen, is a term among tanners for the skins of *young* animals; although many "kips" are really prepared from the hides of full grown animals of small breed, in fact, any skins under 25lbs. weight. The skins are thoroughly impregnated with fish-oil, then hung on a line, and submitted to several severe scrapings on both sides, when, on being dried, it assumes its peculiar softness and pliancy, and can afterwards be washed with soap and water without losing its colour. Another method of treating the flesh side of sheep skins is to soak them in lime-water and in a solution of sulphuric acid. Crude fish oil is then poured over them, and they are afterwards carefully washed in a solution of potash. "Chamois leather" serves many useful purposes—cleaning glass, plate, polishing brasses, dusting, etc. Gauntleted gloves and other underclothing, linings of gold-miners' bags, coverings for whip handles, etc., are often made of this kind of leather.

It may be cleaned in a weak solution of soda in warm water. Rub plenty of yellow soap into the leather, and allow it to soak for two hours. Then rub it well until it is quite clean, and rinse it well in a weak solution composed of soda, soap, and warm water. If rinsed in water only, it becomes hard when dry and unfit for use. After rinsing, wring it well in a coarse towel, and dry quickly, then pull it about and brush it well, and it will become softer and better than most new leathers. The flexibility may also be restored by washing in strong suds made of olive oil and potash with a little water, and afterwards laying it between brown paper wet with glycerine.

Chamomile or **Camomile.** — Fr. *Camomille;* Ger. *Romische Kamillen;* It. *Camomilla;* Port. *Manzanilha;* Sp. *Manzanilla.*

A low creeping composite plant, *Anthemis nobilis,* well known throughout Europe, with strongly scented leaves. The single flowering variety are in high repute, as being more odoriferous and yielding a larger proportion of volatile oil, also as affording a bitter stomachic and tonic; while the double variety produces the common chamomile flowers used for medicinal purposes. The plants require a poor, dry soil, otherwise they are less powerful in their medicinal qualities. They are largely cultivated about Mitcham in Surrey, and considerable quantities are yearly imported from Persia, etc.

Oil of Chamomile is distilled from the flowers. It is of yellow colour and strong odour, with very nauseous taste, but is considered a valuable stimulant and anti-spasmodic. Dose—1 to 5 drops.

Chamomile Tea.—A beverage recommended by Dr. Hood for the use of gouty or dyspeptic sufferers. Infuse 12 chamomile flowers, and a saltspoonful each of grated dry lemon-peel and grated ginger, in a pint of boiling water. Serve from a teapot into teacups as usual.

Champagnes.—These wines are distinguished, according to the site of the vineyards, as river or mountain growths, the former being for the most part "*white,*" the latter "*red.*" The French districts comprehend the departments of Aube, Ardennes, Marne, and Haut Marne. The best wines are grown at a medium elevation upon the hills, for low and soft grounds only produce the very lightest wines of any sort.

The vines are cut down almost to the ground every winter, and the new shoots are never allowed to exceed a height of about 2 feet to 3 feet, it being impossible, without destroying the quality of the wine, to assist or force the plants with much manuring. Only a limited number of bunches of fruit are left to come to maturity, and the grapes are not much larger than good-sized peas or currants, but they contain the purest and the richest blood of the vine.

The Marne vineyards produce the most esteemed, those in the neighbourhood of Rheims and Epernay are the most famous of them. Epernay is, in fact, the headquarters of champagne. A vast subterranean city of wine, the whole town is honeycombed with underground galleries—dark, damp, and cold—for the tens of millions of bottles of this exhilarating beverage. The cellarage alone of one firm (Moet and Chandon) is said to be five miles in extent, all cut out of rock, and containing on an average some 5,000,000 bottles of wine, and others are equally large. The Champagnes produced at Rheims, however, fetch the highest prices, and Messrs. Heidsieck & Co. (of *Dry Monopole* fame) have quite six miles of cellarage, often with six million bottles of champagne in stock. Champagnes are mostly named after the makers. In the beginning champagne is simply white wine of any kind. The wine presses in September are in daily operation, and casks full of the precious juice are being stored on the ground floor of the warehouses. Fermentation continues till the appearance of the first frosts. The wine is then drawn off, to free it from the dregs or lees, and put into tuns, or "foudres," containing about 5,000 bottles each. This stage develops one of the most delicate and important operations in the manufacture of champagne, as in the foudres the different "*cuvées*" are mingled. Nothing is added to it. But, on the other hand, nothing is taken away from it, as is the case with *still* wines. (*Still* wines are poured off, three or four times, into other casks, to free them from the sediment which always forms in wine.) It is just this sediment which develops sugar and carbonic acid gas, that, remaining in the wine, makes it champagne. The champagne then lies in its cask for a year, or sometimes two years. On the judicious blending of the different wines composing the "cuvee," or, in other words, those which are mixed in the same "foudre," very much of the good quality of the wine depends. They must be mixed so as to assimilate, as nearly as possible, both in shade and bouquet, and when this is skilfully effected they will ripen together and mutually aid each other. The houses that have gained the highest reputation for their wines are those which have paid the greatest attention to this part of the process. Sometimes it is mixed with some of the next year's wine of the same character, sometimes not. Finally, sediment and all, it is bottled, and the bottles are stacked, lying on their sides, in great frames. The upper side of each bottle is marked with a dab of white paint, and the bottles are turned a little way round every few days.

It can be easily seen by the white mark when a complete revolution has been made. This is done so that the sediment may not all collect in one place. There is also another and a more drastic process for shaking the sediment about. We hear a loud, hollow, rhythmical reverberating noise. Our guide takes us round a corner, and there we see a row of six men, their faces covered with black wire masks, a bottle held by the neck in each of their hands. With military precision they follow their leader. "One," he cries, and bang, bang, bang, bang, they all hammer their bottles on the board in front of them. "Two," and all the bottles are raised in the air, and waved backwards and forwards. "Three," and the men change their hold from the neck to the body of the bottle, and bang, bang, bang, bang, go the other ends on the board. It looks and sounds as if every bottle must be smashed to pieces. As a matter of fact, few break. The wire masks are to prevent these from flying in the men's faces.

When the wine has been lying long enough, and all the thick part has gathered against the cork (for the bottles are tipped a little to allow of this), the cork is taken out, and the wine in the neck of the bottle, containing the sediment, flies out. The bottles are then handed on to a man, who, with a very ingenious machine, by which several bottles can be worked at once, adds to the wine a little sweet liqueur, to replace the sugar which has shot out in the sediment and to suit different tastes. For the driest champagne only 1 per cent. of liqueur is added; for the sweetest, 12

per cent. The bottles then go to the corker, who, with another ingenious little machine, drives in tremendous corks as large round as a child's fist. He then passes them to the wirer, who, with a third machine, wires down the corks at the rate of one hundred an hour. The bottles are then provided with a necklace of gold or silver foil, and the champagne is finished.

It is, however, inconvenient here to detail fully every operation it undergoes in the cellars, the disgorging room, the bottling room, the packing warehouse with its labelling and papering process, but it is all necessary to obtain a thorough and practical knowledge from the vineyards until we have it on our table in England, which really means about three years from the vintage day till the day we receive it. It must be understood that the champagne is really green even then, and ought to be kept at least another two years before it is in good drinking order, and this is, to a great extent, the reason why good champagne is so dear.

Sillery is so called after the old vineyard of that name. Of the numerous Champagne houses, that of Mercier & Co. is, however, the largest, and the immense caves are cut in pure chalk rocks without any masonry.

The wines of Ay are sparkling, bright, and possess a pineapple aroma. Those of Mareuil, Hautvilliers, Pierry, and the choice red growths of Verzy, Verzenay, Bousy, etc., are much sought after by connoisseurs all over the world; but the other red mountain champagnes are, on the whole, less esteemed than the white. There seems to be a growing demand or preference for "dry" champagnes. A *dry* champagne must be a good wine, or its acidity would be detected at once; but this defect would be hidden by the liqueur necessary to make it sweet; hence, a sweet champagne may be made of almost any quality of wine, however sour or thin.

Sparkling Champagne. — *Grand Mousseux* is the result of incomplete fermentation; it is, of course, the brightest and most captivating, but not the choicest, and lacks the peculiar *bouquet* which makes the creaming or slightly sparkling wine, *Crêmans*, or *Demi-Mousseux*. The class most esteemed by connoisseurs is the "still," so called by reason of its being bottled after the fermentation has ceased. The terms *Cuvée* and *Sec* are often used in connection with champagne; *sec* means dry, and a *cuvée* is a large tub or vat; hence, it signifies a superior tub or vat of grape juice. Champagne is often recommended by the faculty for keeping up the system during exhaustion. It stimulates without subsequent depression, the carbonic acid carrying off the effect of the spirit. Bad or fictitious champagnes are often very injurious to health, and the brands or names of the best makers are closely imitated. A good test of quality is the rapidity with which it throws down its head in a tall glass. It is a mistake to drink it while effervescing. The production of cider in France is about 700,000,000 gallons a year, and it is pretty certain a great amount of this is made into champagne. Indeed, it is said—but there are some people who will say anything—that a great portion of the champagne drunk in this country is made from sugar and green gooseberries, or from rhubarb. Champagnes contain only about 12½ per cent. of alcohol.

Elba Champagne is a recent production of the vine-growers in that island. It is a more robust and ferruginous wine than the French, but, so far, is too recent an experiment to have the delicacy and fineness of taste which age gives to the latter, although it has many admirers, and has obtained medals in several countries.

Sparkling Saumur or *Saumur Mousseux* is often labelled "Saumur Champagne," but this is wrong, and not being a champagne the British Government will no longer admit it under the title of champagne.

All champagnes do not froth, and the best are generally those which only froth slightly. Where there is much froth there is much waste of the better qualities of the wine by evaporation.

Occasionally odd bottles of good brands are found flat and insipid on uncorking; this is usually the result of shrinking corks, which are often too short. The champagne vintage of France averages 20,000,000 bottles, of which about 17,000,000 are exported.

The name Champagne has recently been made a regional appellation, and under no pretext is it to be allowed as a generic term. Hitherto it has also been largely manufactured, in Germany especially, from early and late Burgundy and Klebroth grapes. It has been made almost anywhere in France, and, curiously enough, several of the larger and most noted French businesses are in the hands of Germans—Roederer, Mumm, Heidsieck, etc. There are also several English firms — Ackerman-Laurance, the shippers of Dry Royal Saumur, being one of the chief.

England heads the list of countries with the greatest consumption, followed by America, though whether this last is intended to represent the United States alone or the whole of the two divisions of the continent is not stated. Australia at one time was well to the fore, but it is stated that the recent financial troubles there have had an ill effect on the consumption of the effervescing beverage. The Russians have always had a partiality for champagne; but France, on the contrary, hardly wets her lips with it.

Champagne Cider is, or should be, the best mellow or sweet cider, bottled before it has fermented or worked much, and is not unfrequently made the basis of factitious *Champagne*. It is quite frequently made:—

(1) By charging common cider that is deficient in spirit and sparkle, with carbonic acid gas. *German Champagne* is of this character. (See *Cider*.)

(2) Put in a cask 18 gallons of cider, 3 pints of rectified spirit, and 5 pints of syrup; in three weeks' time fine it with 1 pint of skimmed milk and 1 gill of orange flower water—three drops of neroli will improve it—bottle in champagne bottles and wire down the corks.

(3) Flavour lemonade syrup with the essence of pear, and colour with brunt sugar.

Champignons.—A French name for *Mushrooms*.

Chantilly Soup. — F. *Purée de petits pois*.

Is made of green peas, onions, and meat stock, coloured and flavoured with spinach and parsley or mint. The vegetables are all simmered or boiled till soft, and put through a fine sieve. Sometimes pea-shells are used instead of peas.

Chapelure.—A French name for the raspings of bread used by cooks in garnishing certain dishes, roasts, etc. (See *Holder's "Victorian Raspings."*)

Charas or **Churrus.**—See *Bhang*.

Charcoal, Ivory Black, etc.—F. *Charbon de Bois*; W. *Golosg*.

Common charcoal is made by burning and charring wood or other vegetable substance, and consists of the residue left when such matter is subjected to a high temperature in vacuo, or out of contact with air. Tar is obtained at same time.

Animal Charcoal, a valuable pigment for painters, is produced in a similar way from bones, horns, ivory, blood, etc., and is synonymous with animal black, bone black, and ivory black, abaiser, etc.

The quality of *Ivory Black*, however, depends upon whether it is really produced from ivory or from the allied substances. It is well known that a great deal of what is sold as ivory black is merely the charcoal of hard woods reduced to powder.

Wm. Gardner & Sons, engineers, Gloucester, make machines specially suitable for treating charcoal. Catalogues free.

Charqui. — (See also *Den-Deng* and *Tasajo*.)—A name for hard, sun-dried beef, as preserved in South America.

In preparing the dried meat for export in Chili, whence about 250 tons are shipped yearly, the bones and fat are removed from the flesh, which is cut into strips a quarter or three-eighths of an inch thick, and hung up in the full

rays of the sun, and in about eight hours t is dried as hard as a piece of glue. It is then packed in raw hides, which hrink upon it and keep it very tight. Meat dried in this way does not putrefy, but after a time mites are found in it.

In Buenos Ayres, where it is first partially salted and afterwards dried, the at is left, and the meat becomes rancid, but with the negro populations of Brazil and the West Indies (for whom it is hiefly intended) a little fat is an dvantage in their soups and stews. Mutton is dried in same way, and called Chalona. The exports of charqui, or ried beef, from Buenos Ayres amount o about 40,000 tons annually.

Chartreuse.—(See also *Liqueurs.*) highly-esteemed tonic cordial, btained by the distillation of several romatic plants—balm, hyssop, pepper- int, cloves, nutmeg, the seeds of *ngelica*, *Archangelica*, and especially ettles, growing in the Alps. Sugar and lcohol are added.

It derives its name from the celebrated onastery La Grande Chartreuse, near renoble, Isere, France, where it was riginally made by the Carthusian onks, and it is said they cleared up- ards of £8,000 a year out of it; but in 864 the Pope prohibited the monks om making it any longer for sale, and s the formula has never been made nown, the Chartreuse now sold is said be only an imitation of the original.

Chartreuse, however, still seems to be ie most celebrated of all liqueurs, though it only dates from a recent eriod. In 1830 it was quite a curiosity Dauphine, and even in Paris it was ardly known. At Fourvoirie, at the ntrance to the desert of the Grande- hartreuse, about five miles from the onastery, the monks distil three kinds liqueurs—the Elixir, the Yellow hartreuse, and the Green Chartreuse; ie last named is ranked as the best. he distillery is under the supervision of monk chosen for the purpose; it is true iat hands outside the monastery are ngaged in the work, but they know othing of the ingredients used or the ay in which they are mixed. It is said that this secret was discovered by an innocent-looking young man who got himself received into the order, and during the absence of the prior stole the recipe from his desk. The prior did not prosecute him, but allowed him to make use of his discovery on the condition he kept it secret. The *faux frere* (fictitious brother) is now established at Saint Laurent du Pont, where he fabricates chartreuse, but it is not equal to that of the monastery. So runs the story, although the monks say it is all romance. These worthies aver that the predominating savour of the true concoction is due to an occult mountain herb known only to themselves.

There are four qualities—White, the mildest sort, but too sweet for some people; Yellow or amber coloured, of medium strength, reputed to be the best, and has by far the largest sale; and two of light Green colour—one of the latter being very strong and sweet, while the other is pure, very clear, and fiery, but too alcoholic for most people. Each bottle of the green is encased in a turned wooden case or bellows.

Gross annual output about a million and a half of bottles.

The distillery pays to the State yearly the sum of 1,000,000 francs. (or £40,000) for duty on the spirit it uses. This simple fact will give some idea of the amount of liqueur it produces. All the profits go to the Order, no individual monk being permitted to touch a farthing. The money is understood to be spent in works of charity, but a large portion is reserved for the fund of the Order, which is the richest in the world.

Since the passing of the Merchandise Marks Act of 1887, this brand, "Chartreuse" or "La Grande Chartreuse," as manufactured by the late Lous Garnier, has been registered by the Rev. G. A. Grezier, who, as assignee, claims the sole proprietorship. The bottles are made with bulged necks, and marked with a "cross," surmounted by "seven stars." These marks and labels have never been known to be forged, but old bottles are often refilled in hotels and restaurants, etc., with fictitious concoctions.

Chateau d'Yquem.—A renowned white French wine, produced near Bordeaux, and considered the most luscious and delicately aromatic of the Sauternes, its resplendent colour resembling liquid gold. Its exquisite bouquet and rich delicious flavour is said to be due to the presence of mannite, which has the peculiar property of not becoming transformed into alcohol and carbonic acid during fermentation. The Chateau d'Yquem formerly belonged to the house of Sauvage d'Yquem, who transferred it by marriage to the Seigneurs de Lur-Saluces, and to which noble family it still belongs. The estate is situated at Sauterne in Gironde, and contains 148 hectares, ninety of which are devoted to the culture of the white grapes which produce the world-famed wine. The prices which some of the matured wines attained have been sometimes fabulous, and 24,000 francs per tonneau of four hogsheads have been paid for some 1847's, at which price (which is £240 per hogshead) the Great Duke Constantine, brother of the Emperor of Russia, bought four hogsheads during his sojourn at Bordeaux in 1859, and since then it is said that as much as £4 a bottle has been given by the Bordeaux trade for the same wine for Russia. The grapes which produce the wine consist of three varieties, called Sauvignon, Blanc Semillon, and Muscatel. They are gathered only when beginning to rot, or become covered with a kind of down which gives them an almost mouldy appearance. During this period the fruit under the influence of the sun ferments within its skin. Each individual berry is watched and carefully separated from the bunches with special scissors by an immense number of women who go daily round the vines during a period of three weeks or a month. From this mode of gathering results the creation of various qualities of wines, as the most perfect berries are naturally first gathered, when gradually the choice becomes reduced and the average of the gathering less perfect. Each gathering is classed in generally either three or four classes, termed as follows:—Extra creme tete, creme tete, centre, and queue, or final gathering, when all the grapes remaining on the stalk are picked. Sometimes the whole is blended together, and sometimes it is separated; it depends, of course, on the disproportion in the classifications, which sometimes are so great that there is no resemblance whatever between one and the other.

Chateau Wines.—There are so many of these that it has been considered best to describe each under its particular name; thus Chateau Latour will be found under *Latour*, Chateau Chamboureau under *Chamboureau*, Chateau Margaux under *Margaux*, etc.

Other Chateau Wines are:—Cussac, Lanessan, Chasse - Spleen, Cos d'Estournel, Leoville. Ripeau, Badette, Respide, Rieussee, Peyraguey are *white* wines.

Chawls.—A name for the cured and smoked cheeks of pigs (See *Bath Chaps*.)

Chayotes or **Chocoes.**—The fruit of a cucurbitaceous plant, *Sechium edule*, native of Mexico and Venezuela, but now cultivated in Madeira, Singapore, Ceylon, India, and other tropical countries. They are about four inches long, oblong, tuberculate, and yellowish. Usually to be seen in Covent Garden Market. They are eaten simply boiled, and somewhat resemble the vegetable marrow.

Cheddar Cheese or **"Loaves."**—A rich, strong, fine flavoured, and spongy kind of cheese, either pale or coloured, made around Pennard, near Cheddar, in Somersetshire (but not in the village of Cheddar itself), and has been made in that district for over 200 years. "Cheddar" is also equally well made in many other districts, particularly in Ayrshire, Wigtownshire, and in Galloway district of Kirkcudbright, Scotland, also in Canada and the United States; and, in fact, this type of cheese is the principal kind consumed in England. It seems to have derived its original celebrity from the rich and aromatic herbage peculiar to the Mend

ills and dales which partly surround the istrict. The cheese are made of round ick shape, and weigh from 70 up to 50 and 200lbs. each. Immense uantities of this class are also imported om Canada and the U.S.; but the eneral weight is about 70lbs. Canada pplies a large quantity of cheese of heddar shape, but these are usually met ith in skins or cloths, while the genuine heddars are not.

A choice Cheddar possesses a very ch mellow flavour, and when ripe conins about 28 per cent. of casein, 16 albumen, 24 of fat, 28 of water, and out 4 of ash.

The method of making Cheddar eese is the one most practised in Great ritain, Canada, and the United States. he milk is allowed to stand over night, e cream removed to allow the milk to heated, and then returned imediately before adding sufficient rennet curd it in 20 minutes. The whey ving been run off, the curd is drained, t, stamped, salted, and placed in the eese press for two and a half days.

The evening's milk is usually kept d mixed with the new milk in the orning. Cheddar somewhat resembles d nearly equals Parmesan, and it ings a high price.

In making it the whey is several times immed off, then well beaten, and ured again over the curd to *scald* it. ie eyes or vesicles usually contain a h oil. About two-thirds of it is made thout colour and one-third with. The w make reaches the markets in nuary to April; but the finest is made May, is soft and fat, neither hard nor mbly, has a nutty, pleasing flavour, ither sweet nor acid. It should be ch and mellow, with consistency of dy of close silky texture, pure and en colour—not a mottled or streaky, d should have a prepossessing appearce and finish. This appearance and ish is seen on the outer surface, and cludes symmetry of shape, smooth, ar skin, and not unshapely, or with surface dirty and cracked open like ked clay.

The warmer the room in which the cheese is kept the more rapid is both the ripening and the subsequent falling-off. Hence it is that cheese made late in the season keeps better and longer than that made early.

The best ripening temperature is about 65° F, and to check or stop the ripening 40° F is recommended.

Cheese.—Arm. *Caus;* Du. *Kaas;* F. *Fromage;* G. *Käse;* Ir. *Cais;* It. *Formaggio, Casi;* Nor. *Ost;* Port. *Queijo;* Rus. *Sur;* Sp. *Queso;* W. *Caws.* (See also *American, Dutch,* and *Canadian Cheese.*)

Cheese is the curd, casein, or solids of milk; coagulated by being warmed and mixed with rennet or acid; separated from the serum, whey, or watery part; wrapped in a cheese-cloth, and pressed in a strong vat, hoop, or mould, called a "chesset," till dry. The average yield is about 1lb. of cheese from each gallon of milk.

Ordinary cheese is composed of 30 to 50 per cent. of water, 20 to 35 per cent. of casein, and a *whole milk cheese* should contain about 20 per cent. of fat; if less than ten per cent. it should be classed as *skim* or *blue-milk cheese.* (In Cumberland this is dubbed "Canter" cheese.) England uses, it is said, more cheese than any other European country. The amount of cheese imported by the combined countries of Europe is about 480,000,000lbs., and of this the United Kingdom takes considerably more than half. France imports 63,000,000lbs., and Germany 40,000,000lbs. England makes a large quantity of cheese, but eats it nearly all, and only exports about 4,000,000lbs. The quantity produced in the United Kingdom is probably about 100,000 tons, or one-half the consumption, the importation reaching over 100,000 tons yearly, chiefly from North America and Holland. Germany exports over 40,000,000lbs., and France between 16,000,000 and 18,000,000lbs.; Switzerland sends away 86,000,000lbs., and Holland 112,000,000lbs. The value of cheese produced by a good cow is estimated in Canada at £7, in Parma at

£10, in Neufchatel at £14, and at Camembert, France, at £36 sterling. In England an average cow produces milk for 3 or 4 cwts. cheese yearly, or more than double the weight of the butter. There are many kinds of cheese, which differ from one another according to the richness and sweetness of the milk employed, and of the pastures in which the cattle feed, also according to the mode of preparation. A large quantity, probably one-fourth, of the cheese consumed in this country is that known as the "Cheddar" make. England is, indeed, particularly celebrated for the abundance and excellence of its cheese; Cheshire and Gloucestershire are two of its most famous counties. English, Scotch, and American cheeses are mostly made *hard*, so as to keep good a long time, but many of the Continental varieties are made soft and must be used quickly, or they soon decompose and smell objectionably.

Imports	1899	1898	1897
Holland . . cwts	328585	292925	297604
France . . . „	34307	33086	36358
U States . . „	590737	485995	631616
Australasia „	37495	44608	68615
Canada . . „	1337198	1432181	1526664
O. Countries „	60992	50657	42321
Total . . „	2389314	2339452	2603178

Probably a great portion of this "*Canadian*" was really made in the United States. The freight and charges from America to England are only 1d. per 8 or 10lbs.

Imitations of the celebrated and higher-priced kinds of other countries and districts are often made in England, America, and elsewhere; but many of the processes, especially the Continental ones, are kept secret, and pastures do not all impart the same flavour, so that these latter are rarely imitated so successfully as are those of certain English counties. Common makes are often scraped, greased, and polished outside to represent superior quality. The blue mould so much esteemed, and also the red mould, are vegetable fungoid growths, and specially affect the finer and richer kinds. It has been found, however, that cheese like Camembert, Brie, Neufchatel, Stilton, Cheshire, etc., can be closely imitated in flavour, by the bringing together side by side during the ripening process the foreign cheese and the cheese in process of manufacture, so that the organisms of the old cheese are transferred to the new.

"*Hay Cheese*" is a term used in Lancashire and some other countries to define cheese produced from hay or stall-fed cattle.

"*Culls.*" — Faulty, ill-cured, or inferior cheeses which have been sorted out from the better keeping kinds, to be sold at about half-price and consumed quickly.

Truckle Cheese.—Means a small thick, solid cheese that can be rolled on its edge, as the "Cheddar Truckles."

The maggots often found in new cheese are the larvæ of the *piophila* fly.

The cheese-mite (a species of *acarus*) attacks for the most part old and dry cheeses.

Rotten cheese is very unwholesome, but ordinary cheese is not necessarily considered unsound owing to the presence of parasites, yet it may, of course, be so badly infested with multitudes of maggots or mites as to be liable to seizure by the authorities.

Cheese may be so damaged by sea water, for instance, as to warrant it being seized; or through being kept in an unsuitable place, or otherwise, the butter fat in it may have become rancid.

Cheese should be stored in a fresh, *clean*, cool, and damp place rather than too dry. The poorer the quality the better it will keep and *vice versâ*.

If well salted and freed of all whey most hard cheese will keep good for several years.

Cheese that has become too dry, and cheese cuttings or crumbs, may be utilised for stewing, or for preparing grated cheese, or for Welsh rare-bits.

People's tastes differ very much as to cheese, and some prefer it in a state of decay, and even "alive," and, indeed, it might be hard to show why *mou*

(which is vegetation) should not be eaten as well as salad, or maggots as well as eels; but decomposing bodies can scarcely be good for human food. Cheese improves by ripening to a certain point, but afterwards it deteriorates. Much of the American cheese is so largely mixed with animal fat as to undergo, instead of "slow ripening," rapid rotting. (See *Margarine Cheese.*)

In towns it is more economical for consumers to buy their cheese fresh cut in small quantities as required than to obtain large quantities and allow it to go out of condition. Pliny was the first of ancient writers to mention cheese, and, while praising that sent to Rome from Nimes, alludes to that made in the Valley of the Po as being sour. The amiable and witty A. Brillat-Savarin, admittedly the most enlightened of gastronomists, has said that a dinner without cheese is like a lovely woman with only one eye!

Soft Cheeses are generally made by adding the rennet to the milk at a low temperature; the acidity is not encouraged, and the cheese is subjected to very little pressure.

Australian Cheese, the finest quality is now produced at Bodalla, in the southern coast districts of New South Wales. It is firm, of a reddish colour, and possessing a flavour resembling that of English Gloucester.

The flavour of cheese depends very much on the pasturage of the cows. Old grass pasturage, which is not treated with artificial manure nor used by other animals, is best. Cheese should consist solely of the casein and fat of the milk, for if any serum or whey be left in, trouble will ensue from the fermentation of the sugar, causing the cheese to heave and become porous and strong in flavour.

As regards the colouring of cheese, annatto really adds no good property to it, and all practical dairymen select uncoloured for their own use. Coloured cheese is no richer in fat than uncoloured, but it is often ignorantly credited with being richer, and thus fetches a higher price than white. The added colouring merely gratifies the eye, while it often really injures the cheese as a food, the astringent properties of the annatto reducing the coagulative power of the rennet.

A cheese scoop trick, perhaps not known to everybody, is to probe deeply an inferior kind and replace the sample withdrawn by a similar piece of *good* quality and then in selling the bad cheese to show the good sample. Cheese, especially if not well masticated, is not very easy to digest, and *skim-milk cheese*, hard and tough, less so than the richer varieties; but it has many other advantages, being cheap, portable, easy to store, ready for immediate use, and palatable.

Protein in food is the material used to rebuild the muscular system, so the labouring man needs a large supply of this element to maintain his strength and energy. There seems little doubt, however, that the endless variety of fish, fowl, fruits, and other meats, frozen, tinned, or dried, is lessening the consumption of cheese.

A pound of cheese is said to contain as much solid flesh-forming food as a pound of lean meat.

It has been said that a rich cheese puts fat upon the stomach, but that a lean or blue-milk cheese puts muscle in the arm.

A good cheese has generally rounded edges and sides, but too much bulging betrays fermentation.

A poor cheese has sharp edges, and is often crumbly and dry.

When a piece of rich cheese is rubbed between the fingers it feels smooth and melts.

Subjoined is a list of the best known sorts, both English and foreign, each of which is more fully described under its own title:—

Alpine Cream	Brick-bat
American	Brie
Bachstein	Bringen
Ball (Edam)	Cabrillon
Banbury	Cacio Cavallo
Bath	Caerphilly
Bavarian	Cambridgeshire
Blue Veiny	Camembert
Bondons	Canadian

Cantal (Fourme)
Canter
Cheddar
Cheshire
Cleveland
Cotherstone (5 to 15lbs. each, Darlington)
Cottage
Cottenham
Coulommiers
Cream
Demi Suisse
Derbyshire
Dorsetshire
Double Swiss
Dunlop
Dutch
Edam
Emmenthaler
Essex
Filled
Fodder or Hay-fed
Fromage de Brie
Fourme (or Cantal)
Gerardmer or Gerome
Gervais or Jervais
Gex
Gloucester
Gorgonzola
Gouda
Gournay
Grana (see *Parmesan*)
Groaning
Gruyère
Imitation
Italian
Lancashire
Leicester
Limburg
Lincolnshire
Liptau
Livarot
Lombard
Marolles
Metallic
Middlebar
Mignot
Mont d'Or
Munster
Neufchâtel
New Forest
Norfolk
Norwegian
Parmesan or Parmigiano
Pine Apple
Pommel
Pont l'Evêque
Port du Salut
Pot
Pravoloni
Reggiano
Roquefort
Rouen
Sage
Sapsago or Schabzieger
Sbrinz
Schapekase
Schwazenberg
Septmoncel
Shropshire
Sicilian (see *Italian*)
Slip-coat
Smear-case
Somerset
Southam
Stilton
Stracchini (see *Italian*)
Suffolk
Surrey
Sussex
Swiss
Tilsit
Trentside
Warwickshire
Wensleydale
Westphalian
Wiltshire
Yorkshire
Zermatt

The following figures are from an interesting little booklet, periodically arranged by Mr. W. A. McKnight, cheese importer, Rainford Gardens, Liverpool.

Imports of Cheese, in cwts., into the United Kingdom.

For five years ending December, 1899.

	1895	1896	1897	1898	1899
Canada . . . . . cwts.	1150018	1234297	1526664	1432181	1337198
United States . „	500419	581187	631616	485995	590737
Australasia . . . „	92759	55149	68615	44608	37494
Holland . . . . „	305920	292988	297604	292925	328585
France . . . . . „	56393	45676	36358	33086	34307
Other Countries „	28310	35228	42321	50657	60992
TOTAL . . „	2133819	2244525	2603178	2339452	2389313

Value of Cheese Imported into the United Kingdom.

For five years ending December, 1899.

	£	£	£	£	£
Canada	2335548	2589301	3349501	2943725	3014211
United States	1099283	1234037	1413079	1006586	1380609
Australasia	219645	115479	161776	91161	84318
Holland	774790	734611	748251	724936	810102
France	175541	139532	110087	94102	103159
Other Countries . . .	70323	87382	102827	109732	122692
TOTAL . . £	4675130	4900342	5885521	4970242	5515091

Imports of Imitation Cheese in 1897 from the United States and Holland, 11,874 cwts., value £19,114.
„ „ 1898 „ „ 10,165 „ £15,327.
„ „ 1899 „ „ 5,687 „ £10,049.

The Australasian import consists mainly of New Zealand cheese.

In handling cheese cleanliness is often sadly neglected. It is laid about the shop in a dirty, greasy state, that not only spoils the cheese, but repels the purchaser.

In cutting cheese, the counter, knives and all utensils should be kept thoroughly fresh and clean. The be

vegetable wrapping paper should also be used.

Ordinary cheese should be always kept in a cool place, and, if new, should be turned, to begin with, twice a week. Afterwards once a fortnight until cut. Sometimes, a little butter spread on the side of the cheese not used keeps the same from wasting and drying. In cutting factory cheese, the wire should always be used.

Importers:—Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool; W. A. McKnight (Canadian and States), 24 Mathew Street, Liverpool; R. Rutherford & Co., 112 Whitechapel, Liverpool; J. Wall & Co., Ltd., Liverpool and Manchester; Thos. Wilson & Co. (Cheshire cheese), 3 Hood Street, Liverpool.

Cheese Colouring. — (See also *Annatto*)—Digest one part of roll annatto and one part of potassium carbonate in 10 parts of water for 24 hours. Then filter, adding water if necessary.

Cheese Curd.—A mixture of cassein and butter, carefully freed from milk and water by gentle pressure, and the addition of a little salt.

Cheese Spice.—According to Mr. Allen, the public analyst of Sheffield, this consists of crystallised sulphate of zinc. It is used to prevent the heaving and cracking of cheese, but is highly dangerous to health.

Chequers.—A provincial name for *Service-berries.*

Cherimoyas.—(See also *Custard Apples.*)—The fruit of the *Anona Cherimolea*, imported occasionally from the West Indies, Peru, South America, &c. Very agreeable to the taste, but seldom to be met with in England.

Cheroots (pr. sher-roots). — A species of cigar open at both ends. The original are from Manila, in the Philippine Islands, and are very simply constructed. They are usually made of tobacco two or three years old, and are highly prized for their delicate herby flavour. The outside wrapper must be formed of new tobacco leaf, as it requires to be elastic. They are fit for use as soon as made and dried, and do not require any maturing.

Cheroots are also made in India, but these are somewhat inferior, the defects lying in the tobacco leaf and not in the manner in which it is rolled. Indian tobacco leaf is very light coloured, burns too rapidly, and gives the impression of smoking straw. It also soon becomes dry, especially in hot seasons, and requires some way of keeping it moist. Hence the material which Indian cigar-makers have to work with is not so good as it might be. Unfortunately most of the cheroots now sold in England are filled with very inferior tobacco.

Cherries —Du. *Kers;* F. *Cerises;* G. *Kirschen;* It. *Ciriege;* Port. *Cerejas;* Sp. *Cerezas;* W. *Ceirios.*

The fruit of the tree *Prunus cerasus*, and the favourite fruit of Queen Victoria, chiefly used at dessert and sometimes preserved, dried, and crystallised. It owes its name to the fact that it was first brought by Lucillus from Cerasus, a city in Pontus, hence also the adjective of colour, "cerise." This fruit is much used for flavouring liquors, the bark for medicine, and the wood for making toys and Tunbridge-ware, such as work-boxes, tea-caddies, desks, reels, etc.

There are also a score of species and over 150 varieties, but they may all be brought into two classes, viz.:—(1) *Geans*—black, white, or red—nearly heart-shaped, and with sweet juice as the Bigarreau, Tartarians, etc.; (2) Griottes—red or black—round or oblate, with acid juice as the Morello, etc.

The *White-heart* cherry, or Kentish Bigarreau, is an esteemed variety of *avium*, the body being almost white, with wax-like pink cheeks, and has the peculiar property of slipping from the stone.

The "*White Ox-heart*" cherries of California, now so very popular as a canned speciality form another example of this fruit. The Kentish and the larger Flemish cherry, both commonly known as Reds, are also very popular.

The keeping of cherries on the trees is the greatest obstacle to their culture,

birds and wasps being implacable enemies.

In England the principal cherry orchards are in Kent and Herts, where the *May Duke, Elton, Black Eagle,* and *Bigarreau* are old favourites.

Considerable quantities are also imported fresh from France and other parts of Europe, and the demand is increasing. In 1885 only 18,055 bushels were imported, but in 1893 346,148. Consumers seem to avoid the black cherry, because it is often infested with worms.

Winter Cherries, the shrublets of which often form such a familiar adornment at dinner tables, have, of course, no connection with edible cherries, being, notwithstanding the round cherry-like appearance, more nearly allied to the potato, the cayenne shrub, and the thorn apple.

Cherries are grown everywhere in France, but mostly in Lower Burgundy and the department of the Yonne. St. Bris and Auxerre are in the centre of a remarkable cherry district. Large quantities are also grown around Villiers, St. Frederick, Seine-et-Oise. The Bigarreaux are somewhat crisp, not very digestible, and should be eaten in moderation. The *Guignes* (White-heart cherries), very sweet and globular, and the bright red *Griottes* (Agriotes), very soft and sour, are dried for consumption in winter, and are stored like apples on shelves. The last two species in the South of France are largely used for making jam and for preserving in brandy. Indeed, the French make much more of this fruit than the English. Hence we import *Confitures de cerises* (preserved cherries), *Compotes de cerises* (cherry jam), *Sirop de cerises* and *Ratafia de cerises.*

Cherries in Kent are mostly gathered by women, but elsewhere boys and men are employed. The fruit should be ripe, evenly coloured, and free from damage. Usually packed in "half sieves," holding 24lbs. Early and choice Bigarreau and other kinds are placed in quarter sieves of 12lbs. The baskets are lined with clean paper, folded over the fruit, a little grass or similar material placed on the paper, and then secured with split hazel sticks in the form of a cross. All cherries must be perfectly dry when gathered. Choice kinds, cut off the trees with scissors, are sometimes packed in 10lb. boxes. Very fine cherries are also marketed in 2lb. boxes or baskets (unreturnable) or in 1lb. punnets. To pack cherries in bushel baskets is absurd.

Cherry Apples. — A popular name for *Siberian Crabs.*

Cherry Bounce or **Cherry Cordial.**—A cordial consisting of burnt brandy in which cherries have been steeped with sugar.

Cherry Brandy or **Cherry Syrup.**—Da. *Kirsebær Liqueur;* G. *Kirschen,* or *Kirschenbrantwein;* Port. *Aguardente de cerejas;* Sp. *Aguardiente de cerezas.*

A popular cordial or liqueur made from crushed Morello or other cherries and brandy—say a gallon of each, with 2lbs. of lump sugar steeped three days. Sometimes it is made from our native wild cherries or Black Geans, as the Scotch call them, and sometimes a quart of raspberry juice and half a pint of orange flower water are added. The fruit is usually gathered before it is ripe for this purpose.

The highest class of cherry brandy is made from Morella cherries—a layer of cherries and a layer of powdered sugar filled up with best Cognac. Grant's say they make theirs from Kentish Morellas.

A very superior kind of Cherry Brandy, labelled "*Kirsebær Liqueur,*" is manufactured by Mr. PETER F. HEERING, Copenhagen. Established 1818. Purveyor by Special Appointment to the Imperial Russian and Royal Danish Courts, and to H.R.H. the Prince of Wales. Sold by all the leading wine merchants. Original cases of 12 bottles or 24 half-bottles.

Cherry Peppers. — These are a species of capsicum, *Capsicum cerasiform,* the fruit of which is rather small, and shaped like a cherry or turnip radish.

"Cherry Ripe" Powders. — Intended for Headache, Toothache, Tic, and Neuralgia, are safe and efficacious.

For particulars, see advertisement, page 5. Sole proprietor, R. H. Poole, 120 Witton Street, Northwich.

Chervil. —A culinary plant (*Anthriscus cerifolium*), the herbage of which is used as an aromatic condiment. The parsnip chervil, also esculent, is *Chærophyllum bulbosum.* The sweet chervil (*Myrrhis odorata*) is an aromatic herb used in salad and culinary condiments.

Cheshire Cheese. — (See also *Cheese.*)—About 14,000 tons a year are made in Cheshire alone, but considerable quantities are also made in the adjoining counties of Staffordshire and Shropshire. It has long been famed all over Europe for its rich quality and piquant flavour, and is made in three classes—Early ripening, Medium, and Late ripening.

It is generally made of round shape, and varies in weight from 50 to 100lbs. Instead of being kept twelve months in the cheese-room the Early ripening is ready for use, and often brings the highest price, when only about a fortnight old. This early ripening is of new introduction, heat as well as pressure being used for the separation of the serum. The milk is set with rennet at 78° to 82° F., and the curd is first treated as in the manufacture of sweet curd cheese. It is afterwards drained on racks, to develop acid, and the curd is afterwards ground and mixed with salt. It is then packed loosely in perforated vats, and kept at 70° to 80° F. The whey escapes through the holes, and the cheese is afterwards put in press for a week, but turned and attended to daily.

When removed from the vat it is washed with warm water, greased to prevent cracking, and swathed in stout bandages. The cheese is finally put in a heated room, and is more slowly or quickly ripened according to treatment.

When a ripe Cheshire is cut into, mould will have greatly developed, and from the patches of mould inwards the cheese will appear to have lost some of its artificial colouring. This is due to the spreading of the mycelium of the fungus, which has found its way through the loose texture of the cheese, and has largely contributed to its flavour, character, and moisture. Such cheese is all right if eaten while in condition, but it will not keep long, and soon develops evil flavours.

The best qualities are seldom met with at the cheese fairs; the great bulk goes direct to the buyers in Manchester and other North of England towns.

The production amounts to something like 20,000 tons per annum, and Manchester seems to be the chief trade centre.

Highest and Lowest Prices for choice quality in Manchester each month.

N—new.

Month.	1893	1894	1895	1896	1897
January	72/6 75/-	75/- 76/-	65/- 66/-	65/- 67/6	80/- 77/6
February	75/- 72/6	76/- 77/6	65/- 67/6	65/- 67/6	77/6 75/-
March	75/- 72/6	76/- 73/-	67/6	65/-	75/- 72/6N
April	72/6 70/-	75/- 72/6	67/6 65/-	65/- 63/-	72/6 68/-N
May	70/- 67/6	73/6 65/-	65/- 60/-	63/- 60/-	
June	67/6 65/-	65/- 60/-	60/- 55/-	57/6 52/-	
July	63/-	65/- 58/-	55/-	50/- 52/6	
August	62/6 60/-	60/- 55/-	55/- 50/-	52/6 55/-	
September	62/6 65/-	55/- 60/-	50/- 55/-	55/- 60/-	
October	65/- 70/-	60/- 66/-	55/-	60/- 65/-	
November	70/- 75/-	66/- 65/-	55/- 63/-	65/- 75/-	
December	75/-	65/-	63/- 65/-	75/- 80/-	

Cheshire cheese is usually made solid, homogeneous, dry, and friable, rather than viscid. It is said to owe its excellence chiefly to the geological forma-

tion of the county, which is principally new red sandstone and boulder clay, and, as it has immense salt deposits, the herbage is well suited for cheese production.

Its component parts average:—Water, 30·4; nitrogen, 8·0; fat, 36·6; various, 25·0. It should be made from pure new milk, the morning milk being added to that of the previous evening, which latter is previously warmed to new-milk heat. A piece of dried rennet, size of a half-crown, put into a pint of water overnight and allowed to stand till next morning, does for 18 or 20 gallons of the milk, and it is probably to the unusually small quantity of rennet used for turning the milk that this cheese owes much of its mildness and delicacy of flavour.

The artificial colouring of this kind of cheese is much to be deprecated, and ought to be discarded. Consumers are not so ignorant as they were. Cheshire cheese-making has, indeed, undergone considerable change these last few years; the demand for it has fallen off to a great extent.

Consumers seem to prefer the higher qualities of early or acid ripened, open, and mealy cheese, and, as this will not keep long but must be consumed rapidly, farmers cannot hold it. The result is the farmers must all sell at once, regardless of price, and the old-fashioned, close, waxy makes that require months to ripen have been much neglected. Complaints are sometimes made that much American and Canadian cheese is sold as Cheshire, but no one used to handling cheese can possibly mistake one for the other, the nature and texture of each being quite apparent.

Cheshire cheese as sold at Chester and Nantwich scales 121lbs to the cwt.

Apply to Thomas Wilson & Co., 3 Hood Street, Liverpool.

Chestnuts—F. *Châtaignes, marrons;* G. *Kastanien;* It. *Castagne;* Pol. *Kasztang;* Port. *Castanhas;* Sp. *Castañas;* W. *Pipgnau.* (Also known as *Spanish Chestnuts, Sweet Chestnuts, Marrons, Water Nuts,* etc.)

The edible fruit of the chestnut tree (*Castanea vulgaris*) largely cultivated in Devonshire and various parts of Southern Europe, but especially in France, Spain, and Italy, where the crop averages about 2 bushels per tree.

In some countries they form an important part of the food of the poor, being eaten raw, boiled, or roasted, also ground into flour (*Chestnut Flour*) for bread, and called *Polenta.* Throughout the centre of France, from the Bay of Biscay to Switzerland, there are large plantations, almost forests, of chestnut trees. Some 5,000 tons are exported from St. Malo every year. The poor people through autumn and winter often make two meals a day from them. The chestnuts are first shelled and thrown into boiling water, and then blanched by rubbing off the inside skin. A wet cloth is then arranged in an earthen pot, and almost filled with the blanched nuts. After covering with a second wet cloth, they are put on the fire to steam, and finally eaten warm with salt and milk.

Hot steamed chestnuts are commonly carried round the streets in baskets or pails. They are also served, not only steamed, but boiled, roasted, pureed, and as dressings for poultry or meats. They are often used as a vegetable, and are very popular even on the tables of the well-to-do and wealthy.

Chestnuts blanched, dried, and ground into flour are made into bread or sweet heavy flat cakes, not unlike the oaten cakes of Scotland, by the mountain peasantry. Chestnuts, when stored, are very apt to heat and ferment. They require great care, and should be placed in cool, airy bins, so that the air may readily pass through and ventilate them. The Spanish or Sweet Chestnut, *C. Sativa,* is a stately tree, with spear-shaped leaves and tapering serratures at the edge. The leaves are yellowish, and form in long clusters; the fruit is enveloped in a husk, defended by numerous complicated prickles. They are not quite equal to the French in quality, although immense quantities are grown in Viscaya, Estremadura, and the

Asturias; but the best come from Italy. Spanish chestnuts may be eaten raw as gathered, or baked and flavoured with salt. If the nuts are gathered unripe, they are light and poor in quality; they should be allowed to ripen and fall. Any that remain in the husks should be taken out, and all thoroughly dried in the sun or in an airy room. They may then be stored in air-tight jars, or packed in alternate layers with dry sand, and kept free from damp and frost until wanted for use.

The annual production of chestnuts in Italy is about 400,000 tons, and the chief centre is Liguria, where the crop reaches about 2 cwts. per head of population.

Horse chestnuts are a wild and coarse species, and, although eaten by horses and some other animals, are very bitter and unsuitable for human food; nevertheless they are also made into flour.

Chestnuts contain the least oil, and are, therefore, the most farinaceous and digestible of all the nut tribe.

In some countries, and particularly in Canada, chestnuts are very popular at Hallowe'en.

Imported chestnuts have generally been kiln-dried and decorticated to prevent germination on board ship.

Indian Water Chestnuts are the fruit of a water plant (*Trapa bispinosa*), and are extensively cultivated in the North-West Provinces of India, China, and Italy.

They grow under water, large sheets of which are staked out with bamboos and regularly farmed. The nuts are of triangular form and covered with a rough brown integument, which adheres strongly to the kernel. The kernel is of white colour and of a fine cartilaginous texture. (See *Water* or *Trapa Nuts*.)

These Water Chestnuts afford food for the natives for about four months of the year. When roasted and reduced to a powder, the flour is considered more nutritive than rice, and is usually preferred to either tapioca or sago. *Chestnut Flour* and meal, first brought to notice in England as an article of food in 1879, is usually sold in original packets, and has a large sale among vegetarians, etc., in this country, and the demand for it is increasing.

Chevrets.—A French name for small cheeses made of goat's milk.

Chew Sticks.—These are the stems of a climbing West Indian shrub, *Gouania domingensis*. They are sometimes pulverised as an ingredient for tooth-powder. Pieces of the stem, with one end beaten into fibre, have also been used as tooth-brushes.

Chewing-gum.—(See also *Chicle Gum, Sapota*, etc.)—A popular American masticatory or compound prepared from *Chicale*, a sort of gum obtained from a Mexican tree, very similar to the india-rubber tree. Gum from young trees is best, lighter in colour, and better flavoured, than from old trees. Some sorts are made from a gum-resin got from spruce and other trees, but chiefly from the chicle extract obtained from the sapodilla tree (*Achras sapota*).

The manufacturing industry is, in fact, now being dominated by a trust, *The American Chicle Co.*, which is so-called from the fact that this peculiar vegetable gum has become the principal ingredient in most makes.

A quarter of a century ago there were only two kinds of chewing-gum in use in the United States, viz., the regularly prepared spruce gum and shoemakers' wax.

A little later a mixture of paraffin wax, with either resin, balsam of tolu, or similar ingredient, was put on the market, and was known as "*Coal-oil gum.*"

Preparations called "*Taffy tolu*" and "*Snapping wax*" were next introduced for similar use, but these were mere pioneers for the enormous trade which has sprung up in "Chicle chewing gum."

About 1884 a lot of this Mexican gum was sent to New York on board ship, partly as ballast and partly in the hope that it would be found suitable for use by bookbinders or possibly in the leather trade. After several trials it was thought to be quite useless for any known purpose, and, failing to find a purchaser, it

was decided to tow it out to sea and throw it overboard.

Just at that time one of the men standing on the wharf casually picked up a piece of the gum, examined it, and found it would "chew."

The idea at once occurred to him that it would form a suitable basis for making a new kind of chewing-gum, and, without difficulty, he succeeded in obtaining the whole lot for the trouble of shovelling it out of the ship. That man was a Mr. Adams, now a millionaire, several times over, and the head of the firm of Adams, Sons, & Co., 148 to 155 Sands Street, Brooklyn, New York, to whom we are indebted for above particulars.

How it is made.—Mr. Adams' first venture in making chewing gum was cooked in a tea kettle and worked up on the kitchen table. Now, the gum as taken from the bales is first chopped into small pieces and then boiled in water. Wood, pieces of bark, and all other impurities which are light, separate from the gum, float on the surface, and are skimmed off; whilst those which are heavy, such as dirt, stones, etc., fall to the bottom.

When the gum is perfectly clean it is ground up in a mill making about 3,500 revolutions a minute, and then subjected to a continuous heat of 140° F. in drying rooms.

When sufficiently dried it is sent to the cooks, who put it into large steam jacketed pans, and add to it pure white sugar, granulated pepsin, powdered kola, or other desired ingredients.

It is then kneaded into the consistency of bread dough. The "dough boys" then take it in hand, and add the flavouring ingredients, such as oil of peppermint, oil of winter-green, etc., etc., and, whilst still warm, thoroughly work it until it looks like gingerbread, finely powdered sugar being added from time to time during this kneading process to prevent its sticking. It is then allowed to cool, and afterwards passed through steel rollers until reduced to the proper thickness, when it is removed to the markers, steel-knived rollers, which partly cut through the long sheets of gum. Next it is removed to the seasoning room, and finally broken up into pieces of suitable size on the lines left by the markers. The finished gum then goes to the wrapping room, where the nimble fingers of young ladies wrap it in waxed paper, tin-foil, and pretty wrappers, and these to the packers, who pack it in jars or boxes, ready for sale to the numerous dealers.

All are sweetened and flavoured more or less with liquorice, tolu, peppermint, or other essences. An example:—Take of balsam tolu 4 ozs., white resin 16 ozs., sheep suet 1½ ozs., and melt together. Then of above mixture take 2 ozs., white sugar 10z., oatmeal 3 ozs. Soften and mix in a water bath. Roll the pieces in finely-powdered sugar or flour to form sticks, etc.

Paraffin, with a little olive oil and glycerine, are sometimes melted together for a chewing gum. The exact mixture of these varies with the season.

The chewing of gum is a very ancient custom in the East, where the gum used is mastic, slightly aromatic in character, and called "mastitia" or "gomma." It is found in plants largely cultivated on the Mediterranean borders, the finest varieties being obtained from Chios. The plant is a low shrub of the genus *Pistacia*. The term "mastic" is itself derived from the Greek for masticating or chewing. In Turkey and Armenia the women are in the habit of using this kind as a means of keeping the teeth clean and giving a sweet odour to the breath. It is supposed the habit of chewing it arose from the desire to dissipate the aroma of garlic from the breath. Its use certainly stimulates the salivary glands, but whether excessively and injuriously is uncertain.

The use of chewing-gum is one of the marked idiosyncrasies of the people of America, where, since 1868, it has had a very large sale. There are now in the United States at least five immense chewing-gum factories, a dozen others of moderate size, besides innumerable smaller concerns engaged in the industry. One company alone sells over five million dollars worth yearly.

and increasing quantities are exported to China, Japan, the Black Sea, Egypt, and to the gold and diamond fields of Australia and Africa.

Chewing gum was introduced into England about 1882, and is now sold by many confectioners, but, of course, it is intended for chewing and sucking only. It is used mostly by workmen and athletics, in lieu of tobacco, and the demand seems to be increasing everywhere. It is, however, an unsightly habit, and a wary professor in the States has hit upon the happy idea of informing the ladies that it spoils beauty by wrinkling the face.

Being very indigestible, it should never be swallowed.

Several deaths have occurred through young children swallowing it, and retailers in this country have frequently been fined for selling as "gum" compounds made up largely of paraffin "wax."

Chianti Wine.—A common low-priced Italian product.

Chiavenna Wine.—A Swiss product of the Grisons. It is a white and aromatic variety, made from the red grape.

Chica or **Chicha.** — A beer used from time immemorial in South America, and prepared chiefly from maize, but also from barley, rice, manioc, pineapples, or grapes. In Peru, where Chicha is the national drink, the corn is pulverised between two stones, the meal put to soak in water, and the mass is afterwards boiled. The juice is then fermented, and the result is a sour liquid, not unlike weak cider.

Chick or **Pigeon Peas** or **Gram.**—F. *Pois chiches;* Sp. *Garbanzos;* W. *Tdbys.*

The dark-brown or black fruit of an annual herb (*Cicer arietinum*), long cultivated in India, where they are called "Gram," and a few other warm countries. In Turkey they are known as *Camel Corn*, and fed also to horses and cattle.

This plant yields a short hairy pod containing one or two small netted seeds with two swellings on one side.

An acid liquor or medicine is got by collecting the dew from the leaves and pods in the early morning, which contain oxalic, acetic, and malic acids in solution. These are very irritating to the hands and injurious to the boots in walking through the fields.

The husked peas contain 21·7 per cent. of albuminoids and 59 per cent. of starch, whereas maize contains only 9·5 and 70·7. Hence, crushed gram mixed with an equal weight of ordinary food is excellent for horses. In India gram is the chief, and sometimes the sole, food for horses.

Chick peas are commonly sold in the shops throughout Spain, parched for food, and are much used in *olla podridas;* also are an important factor in French cookery. They are also roasted and extensively used in the East, where they form the common parched pulse.

When roasted they are said to sustain life longer than any other food in similar quantity, hence they are much used by travellers through the deserts. They are also very common in the bazaars at Calcutta. The juice is used by the ryots of India in their curries instead of vinegar.

Chicle Gum. — This is the coagulated sap of the Zapote (*Sapota Achras*) or "Ya" tree of the native Maya Indians in Mexico, and has lately been a favourite base with mesquite and other gums in "Chewing-gum" manufacture. It is gathered in the dense forests on the Campeachy coast in the rainy season, when it is "ripe," by the natives who, with wood knives and ropes, ascend the trees and cut in the bark canals down the larger branches, connecting them with a vertical cut down one side of the trunk; whilst branch canals are cut so as to lead all the milky white sap slowly down into a receptacle below. The sap is at once coagulated on the spot by boiling in caldrons until it "takes point," *i.e.*, reaches a certain consistency, when it is poured into moulds to harden and dry. Each block is stitched in jute or hemp bagging ready for shipment, *viâ* Vera Cruz. The

gatherers being paid by weight, much dirt, gravel, and even cobble stones are mixed in it and sometimes paraffin. The best is of dingy greyish colour, about the consistency of beeswax, and free from impurities. The export from Progresso, in Yucatan, for 1896, exceeded by nearly a million pounds that of 1895, and altogether the export from Mexico must be about 1,000 tons yearly. (See *Chewing Gum*.)

Chicory.—F. *Chicorée*; G. *Cichorie*; It. *Cicoria*; Sp. *Achicoria*; W. *Ysgali*; Y. *Meirch*. (See also *Succory*.)

Grocers' or Coffee Chicory is prepared from the white milky roots of a perennial plant, distinguished botanically as *Cichorium endivia* or *chorée endive*, belonging to the same family as the dandelion, but grows 1 to 5 feet high. It is a native of China, but grows wild in many parts of the Continent. It is cultivated principally in Belgium, Holland, France, and Germany, also in the Eastern counties of England.

CHICORY.

A Continental variety, known as Witloef (*C. intybus*) or small chicory, is especially cultivated in gardens for its leaves, and used as a winter vegetable or for salads; but both may be traced back to the *chorée sauvage*, and, according to Jussieu, are indigenous to the European Continent. The leaves of the common variety of chicory, called in France *Barbe de Capucin*, are very bitter, and are little used at the English table (see *Salad Plants*). There are about 200 chicory works in France, but most of the chicory used for mixing with coffee comes from Belgium and Holland, where the production is still increasing, and where it largely replaces coffee in the lower ranks of society.

Foreign Chicory	1899	1898	1897
Imports . . . . cwts.	92385	95609	99920
Home Consumption . . . . „	78543	80060	82049
Exports . . . . „	544	470	1448
Stocks in Bond „	13000	10000	12000
Value of Imports . .	£43004	£42197	£43852
„ Exports . .	590	485	1482

The plant is sown in the spring, grows 6 feet or more in height, blossoms in August or September, and can be easily recognised by its bright blue flowers, which measure about 1½ inches across.

The root is white, large, fleshy, and carrot-like, running deep into the ground. It contains a large quantity of sugar, some of which during the process of roasting becomes caramelised, and really imparts a bitterness very like coffee. When dug up the root is washed, cut into small pieces, and dried in a kiln until shrivelled up to about a quarter its original weight. It is afterwards roasted with a little oil or fat to prevent it burning, ground into powder, and as it yields a larger amount of extractive matter, and is much cheaper than coffee, it has long been used to mix with the latter. Its use in this way originated in Holland about a century ago, was first noticed in England about 1830, and prohibited in 1832; but in 1840 the law was again altered, and its use permitted if clearly labelled and sold as "a mixture of chicory and coffee." The addition of 1lb. of chicory to every 8lbs. of coffee is by some of the best judges even considered an improvement. Properly roasted, chicory is of a fine blackish-brown colour.

Chicory, however, is quite destitute of the exhilarating and restorative properties of coffee, and only gives bitterness and dark colour. The little oil, butter, or lard added in roasting, say 2lbs. to each hundredweight, also gives it the exact lustre of genuine coffee.

Analysis shows chicory to consist of water, 9·09; soluble salts, 4·20; soluble extractive substances, 41·29; soluble gummy resinous substances, 5·22; dextrine, 6·12; saccharine matter, 11·36; cellulose, 19·40; caramel, 2·10; carbon, 1·18; empyreumatic oils, 0·04.

Its consumption is said to conduce to the growth of hœmorrhoids. Mochara chicory is a preparation of roasted and pulverised figs.

The immoderate use of chicory in coffee is said to have injured the sale of this latter, even chicory itself has often been found adulterated with red earths, Venetian red, and flours of wheat, rye, beans, mustard husks, etc. If kept a long time it is apt to cake, and when badly made or badly stored it changes rapidly. It swells up by absorbing moisture from the air, thereby bursting the packet in which it is contained, and soon becomes covered with mould, consisting principally of Peicillium galucum and Aspergillus glaucus. In this state it is evidently unfit for food.

Gardner's patent "Rapid" Sifter and Mixer, freely used for above. Prices, from 50/- to £100. Catalogues from Wm. Gardner & Sons, engineers, Gloucester.

For chicory, apply to Hedley, Gamble, & Crosfield, Circus Street, Liverpool; Morris & Jones, 13, 15, and 17 Sir Thomas Street, Liverpool.

Chili Saltpetre. — See *Nitrate of Soda.*

Chili Vinegar.—This is easily prepared by soaking capsicums, chillies, or cayenne pods in ordinary vinegar, or acetic acid and water, and then filtering.

Chilled Meats.—See *Beef chilled*, *Pork chilled*, *Frozen Meats*, etc.

Chillies.—(See also *Capsicums* and *Cayenne Pods.*)—The Mexican and American name for the small species of the Capsicum, such as *Capsicum fastigiatum* Bl. (*C. minimum* Roxb.), which bears two pods in the axil of the leaves, whilst the two other species have only one. Both the thin, smooth, shining, and brittle pericarp and the inner seeds, flat shaped and of yellow colour, are intensely pungent.

Large quantities are grown in Africa, especially in eastern Zanzibar, but the plants receive very little attention from the native growers or Wahadimu. The pods are of a dull brown colour, but very pungent. Not half of the crop is ever gathered, and they are very carelessly dried. In fact, they are often purposely damped on the way to the coast for shipment, so as to increase their weight, and these soon ferment and spoil unless quickly re-dried.

The production in Zanzibar has increased from 16,336 frasilas (a frasila equals 35lbs.) in 1895 to 16,511 frasilas in 1896. There is no doubt that a more valuable product could be obtained if proper care and attention were bestowed upon the cultivation of this commodity, which is attended by considerable discomfort to the native workman, contact with the plant causing irritation to the eyes and skin.

All these small pods are better known as chillies than by the Pharmacopœia name of "capsicums," which latter is more commonly applied to the much larger fruit of "*capsicum annuum.*" During the last three or four years a very clean, bright red variety of chillies, *C. minimum* or *C. fas*, has been coming from Japan. It is less pungent than the dull dark red and inferior African growths, but of finer aroma and more attractive in colour, and seems to correspond with the orange red form of the variety conoides of *C. annuum.* The word "chillies" must, however, be a misnomer for a vegetable with so high a temperature (in the mouth!).

Bird's Eye Chillies or *Bird Peppers* are a still smaller variety and of superior quality.

Apply to Allen Jeeves & Sons, Seddington, Sandy, Beds.

Chimney Cleaners. — Many of these are formed of a mixture of two parts of sulphur and one part of common salt, but a superior kind, known as "*Anti-soot*," is made by Fitch & Sons, Tamworth.

China Cement.—(See also *Cements*, *Liquid Glue*, etc.)—The following is a useful formula:—Take of gum ammoniacum, 3 drachms; Brazilian isinglass, 3 ounces; distilled water, 6 ounces; methylated spirit, 12 ounces. Add 4 ounces of spirit to the water, in which dissolve the isinglass by the aid of gentle heat; dissolve the gum in the remainder of the spirit and add to the previous solution.

China Clay.—A white clay which produces a very fine powder.

China Nuts.—See *Lychees*.

China Oranges.—See *Oranges*.

Chinese Artichokes.—*Crosnes* or *Stachys Tubers*. These are tuberous underground stems, now grown in England, Ireland, France, and Switzerland from the Japanese plant *Stachys tuberifera*, a member of the dead-nettle or labiate order, to which thyme, mint, sage, and other pot-herbs belong.

They have a swollen bead-like appearance, owing to the accumulation of food matter in the internodes. Though in 100 parts by weight, 78·3 parts are water, 2 parts are nitrogenous (*i.e.*, eight times as much as in the potato tuber), and 16 parts are a readily-digested carbohydrate known as galactan, a body which is much more digestible than starch, being allied to dextrin, and so much more easily converted by the digestive juices into soluble dextrose or sugar. As a vegetable for the table it should be boiled from 15 to 20 minutes in salt and water, and eaten with a simple white sauce, à la poulette, for example. The flavour is like that of boiled chestnuts. They are recommended as a sort of peptonised substitute for potatoes, especially for invalids or for people with delicate stomachs.

Chinese Bird-Nests.—See *Edible Bird-nests*.

Chinese Ginger. — See *Preserved Ginger*.

Chinese Spirits. — The Chinese word *Samshu* means distilled spirits, and covers the three qualities, known as *Leu Pun Chau* (half materials liquor), *Sheung Ching Chau* (or twice distilled liquor), and *Sam Ching Chau* (thrice distilled liquor), all of which are obtained from rice. They are all colourless.

The first, *Leu Pun Chau*, is made from equal weights of rice and water, fermented with a balm or odourless substance, composed of rice, bean flour, red earth, and cassia leaves. After standing about a month, this fermented liquor is put into a boiler and distilled. Retails at 5 cents. a catty.

Sheung Chin Chau is a little stronger than the above. It is made by placing in the still a quantity of Leu Pun Chau along with the usual fermented liquor. Retails at 7 cents. a catty.

Sam Ching Chau is the strongest; Samshu, the mixture from which it is distilled, consisting of a still larger proportion of Leu Pun Chau and less of the fermented liquor. Retails at 10 cents a catty.

In use, these drinks are never diluted. Leu Pun Chau is the most popular beverage, and is from 50 to 60 u.p., the others being considered too strong in alcohol for habitual use.

When these latter are used they are taken in very small sips only, and mostly on festival days.

Other Chinese beverages are prepared by mixing Samshu with certain substances, such as—

Ching Mui Chau, composed of Leu Pun Chau, sour plums, and sugar. Retails at 8 cents. a catty.

Mau Kan Chau, from Triticum repens, Leu Pun Chau, and sugar. Retails at 8 cents. a catty.

Chang Chau, from oranges, Leu Pun Chau, and sugar. Retails at 8 cents. a catty.

Mui Kwai Chau, from roses, Leu Pun Chau, and sugar. Retails at 40 cents a catty.

Ka Pi Chau, from Ka Pi (a bark used for rheumatism), Leu Pun Chau, and sugar. Retails at 30 cents. a catty.

Ning Mun Chau, from limes, Leu Pun Chau, and sugar. Retails at 8 cents. a catty.

Muk Kwa Chau, from papaws, Leu Pun Chau, and sugar. Retails at 8 cents. a catty.

Fa Chau is a liquor about 40° u.p., is obtained from an equal quantity molasses and Tso Sui (the mixture for making Leu Pun Chau); and this is used for making several of the wines in which Leu Pun Chau is ordinarily used. Retails at 7 cents. a catty.

Shüt Li Chau is made from Fa Chau and Tientsin pears. Retails at 8 cents. a catty.

No Mei Chau is a liquid of varied composition. Fa Chau is used for it, together with No Mei or full-grown rice, or No Mei Chau is frequently sweetened Leu Pun Chau, in the preparation of which No Mei or full-grown rice has been used. Retails at 7 cents. a catty.

Shan Kut Chau is a wine prepared from Shan Kut—a very small, hard, bitter orange—and Fa Chau. Retails at 8 cents. a catty.

All distillers in China also make sauces, by converting Leu Pun Chau or Fa Chau into vinegar, and adding the appropriate ingredients.

Chinese Starch.—So called because the use of starch in Europe was originally introduced from China, where, for ages, it has been made and is still made from sago. This is the article the celestials use as paste for fixing the outside paper on tea chests, boxes, etc., and it forms one of the most adhesive substances known. Before the times of Colman, Berger, Orlando Jones, etc., and the London laundry starches, all starch was made from sago, but the demand for this kind is now small, and the "*Glenfield*" is almost the only survivor. Only a few manufacturers produce it, although it is said to be the best kind for mounting photographs, etc., and will keep good a long time.

Chinese Sugar.—See *Sorghum*.

Chinese Teas.—(See also *Teas*, *Packet Teas*, and *Blended Teas*.)—The tea-plant, *Camellia thea*, or *Thea sinensis*, classed by botanists in the natural order Camelliaceæ, or more correctly Ternstroemiaceæ, has been cultivated in China some 2,000 years, as a sort of dwarfed shrub much smaller than the Indian and Ceylon growths, but is a much hardier shrub in China than in the others named. In China the plant is grown one to five feet high, with a bushy stem and numerous very leafy branches, resembling a myrtle in appearance. The leaves, two or four inches long, when fully expanded, are alternate, elliptical, obtusely serrated, veined, and grown on short thick channelled foot-stalks. The calyx is small, smooth, and divided into five obtuse sepals; the flowers are white, axillary, and slightly fragrant, often two or three together on separate pedicles, producing three-celled and three-seeded capsules.

Tea is cultivated more or less all over China, except on the extreme North, and its history or origin is buried in oblivion. No one seems to know at what period the infusion was first used as a beverage. A list of all the names and meanings for the different kinds cannot be given here, but the principal sorts are more fully described under their respective names. Whether green, black, red, tile, or brick teas, they are all produced by the same kind of shrub, merely showing a slight tendency to variation in different districts as regards length and width of leaf. The plant is propagated from seeds sown in rows about four feet apart, and in the course of two or three years bears a small crop of suitable leaf; at seven years old they yield only about 4 ozs. per tree, the finest teas growing between the 27th and 31st parallels of latitude. The leaves are picked at three or four periods of the year, commencing from the latter part of April. The bushes are also usually clipped to make some of the "brick" teas, and to encourage the growth of young shoots in the following spring. When picked, which has all to be done by hand, the

raw leaves are partly dried in the sun by spreading them on mats, and the shrivelled product pressed and rolled by men who stand in tubs, kneading the leaves into a ball with their naked feet. This operation gives a twist to the leaf, and removes superfluous watery juices. The tea is seldom dried by fire by the smaller tea-growers, unless the weather be wet and the tea likely to mould from the want of sun-heat. It is stored in bags long enough to collect a quantity, and is then conveyed to the larger tea-houses, "fired" by placing it in thinnish layers on pieces of wicker-work shaped like dice-boxes with both ends open, and put over a charcoal fire. The heat is never allowed to exceed 212° F., and the tea is afterwards sifted, winnowed, mixed, and picked over, and then fired again so as to get rid of any moisture acquired during the curing. When packed and soldered in chests it is not expected to undergo any further change; but often the charcoal fuel—especially if used damp—imparts a tarry or smoky flavour. It must be admitted that Chinese teas will keep longer than any other, and that they even improve and thicken by keeping.

Names of a few China Teas:—

Black Leaf ("Monings") from Hankow and Shanghai:—Ningchows, Oopacks, Oonams, Oonfaas, Kintucks, Ditto Congou, Moning Congou, Keemuns, Hohows, Kew Kiangs, Seangtams, Shantams, Tongsams, and Yclangs. Also Lapseng, Pouchong, Formosa Oolong, and Ning Yong ditto.

Red Leaf ("Kaisows") from Foochow:—Soo Moos, Suey Kuts, Ching Woos, Panyongs, Padraes, Saayunes, Souchongs, Young Hows, and Paklings, or Pekoe Congous.

Fancy Teas Glazy Ouchains, Scented Orange Pekoe, and Scented Caper from Canton. Some of the last-named are olive in colour, and others are black glazed. Ouchains are the small sifted from Scented Capers.

New-make Congou (in boxes) from Canton and Macao:—Tayshans, Fourth crops, Flavoury (or Honeysuckle) arrive December, January, and February.

Green Teas:—Moyune, Gunpowder, Ping-Sueys, Imperial, Hyson, Feong Mee, Young Hyson, Sow Mee, Tonkay or Twankay, and "Country" teas.

The youngest leaves make the best teas, and starting from the shoot, and numbering the leaves as they come from one to seven, the following varieties are obtained: (1) Flowery Pekoe; (2) Orange Pekoe (gathered in April); (3) Pekoe (in May); (4) First Souchong (in June); (5) Second Souchong (in July); (6) Congou (in August); (7) Bohea (in September).

1, 2, and 3 make *mixed Pekoes*, and 1, 2, 3, 4, and 5 make *Pekoes Souchong*.

It will be noticed that the above names really indicate only a gradation of qualities from the young bud to the full-grown leaf, each succeeding gathering being less fragrant and valuable, and the final one usually consisting of large old and withered leaves of little value.

At the end of the season the clippings of the bushes, stalks, and everything in the shape of tea are all worked up to meet the speculative and indiscreet foreign trader. Chinese teas have suffered much in the estimation of the British public owing to these low qualities, adulteration with young willow and other dried leaves, sand, etc., also from the fact that they are always worked up by the hands and feet; and those who have seen much of the hands and feet of the Chinaman prefer articles which he has not touched. On the other hand, Chinese teas contain much less tannin per pound than Indian and Ceylon growths. Sir Andrew Clark says: "If you want to have tea which will not injure and which will refresh, get black China tea."

Every nerve used to be strained to hasten the new crops of Chinese teas into the British market, and the fastest ships employed to bring the first cargoes. As the trade grew in importance, the advantages of rapid transit for the tea of new season's production began to be appreciated, and the slow and stately progress of the old East Indiaman grew out of date. A type of vessel specially designed for the rapid carrying of tea

from China to England, *viâ* the Cape of Good Hope, was introduced, known as the China clipper, and the competition was always keen as to which ship should make the most rapid passage. This culminated in the year 1866, when nine ships sailed almost simultaneously from Foochow, three of them crossing the bar in company. Those three were all built by the same builders in Greenock, and came in ahead of all the others, making the long voyage of fully 16,000 miles in 99 days. They each docked in a separate dock in London upon the same day, and all within two hours of each other. The two leading ships had not seen each other for 70 days, and met off the Lizard, from which point they ran a neck and neck race before a strong westerly wind, with every rag of canvas set.

The opening of the Suez Canal, in 1869, soon changed the course of all trade with the East, and in a few years the sending of tea per sailing ship round the Cape of Good Hope was a thing of the past. Romance was no more, although there was extreme competition in building steamers with great power and speed to land their cargoes rapidly by the new route. This culminated in 1882, when the ss. Stirling Castle made the phenomenal run, for those times, of 28 days from Woosung to London.

"New seasons" now arrive in London about the end of June. This new tea has certainly the most flavour, and the value is higher, but it is said the Chinese themselves prefer tea when it is a year old. In 1865, out of every 100lbs. of tea consumed in this country, 97lbs. were Chinese and only 3lbs. Indian, but in 1894 China contributed only about 50 per cent. and the consumer bought that about 50 per cent. cheaper.

A large amount of earthy refuse, stalk, and broken leaf has lately been coming from China in consequence of a tax being now put on the refuse tea in China, same as upon good tea. There used to be no tax on the refuse, and it was then all used in China by the poor, but it is now taxed, and consequently made the most of by exportation. (See *Tea Dust.*)

The kinds of Chinese tea which seem to have diminished most in export are the better Congous, Pekoes, Souchongs, Ponchongs, Capers, and Oolongs; others appear to keep their position notwithstanding the Indian growths.

The best Chinese teas are generally bought up in advance by Russian merchants and command big prices, there being in Russia, Japan, and China epicures more dainty as to their tea than any of our own magnates are about their wines, "Chops" running $100 to $200 per picul (133⅓lbs.), and extra fine pickings $10 to $50 per lb., being common. The Governor of Formosa, for instance, pays $10 to $20 per lb. for his tea, and it is certainly of excellent quality.

The Chinese never dye the tea they use themselves, but only that for export. They rarely consume other than the black kinds, and tea is the popular beverage, not only in China, but throughout Japan as well. It is sold in all public-houses (or "tea-houses") both in towns and along the roads.

The tea they use is prepared by a single "firing," after drying in the sun, and is a very different article from that prepared for the English market, which is sometimes fired several times. That for Russia which undergoes no special preparation for the short overland voyage which it has to make, is more like the Chinese native tea in flavour, and when prepared is altogether superior to that made in the teapots of English households, after the long voyage through the tropics, exposure in shops, etc.

Scented Teas.—Chinese teas, such as Capers, Orange Pekoes, Oolongs, etc., owe their freshness of flavour or perfume to leaves and flowers of various plants, the chief being a kind of jessamine, known in China as *Qui Fah.* The *Olea fragrans*, a fragrant kind of olive, native of China, the *Iris*, and the blossoms, roots, and oils of other plants are also used for the same purpose.

The flowers of the *Aglaia odorata*, the *Jasmium Sambac*, the Chloranthus, and the Gardenia are also often used to

scent teas. Sometimes the scenting is effected by mixing odoriferous flowers with the tea while fermenting and afterwards separating them.

The regions in China which export the most tea are the South-eastern—Kwang-tung, Fuh-keen, Keang-se, Che-Keang, Keang-su, and Gan-hwuy—black tea being produced in the more southerly parts of above districts, and the green teas in the country lying to the north.

Foochow, Amoy, and Canton are the oldest ports of shipment, but Wenchow has during the last three years assumed a remarkable prominence (see *Wenchow Teas*); while the trade of Amoy has been destroyed simply through the short-sighted greed of the officials, who have overwhelmed the growers with a series of illegitimate exactions.

In all tea-growing districts throughout China, the seeds of the tea plant not required for raising new bushes are collected and treated for their oil, which is there employed for both food and lighting.

It is a rather melancholy circumstance to see such a great inter-national commerce as that so long existing between China and England crippled and well-nigh obliterated, but it must be mainly attributed to the obstinate conservatism which has so long characterised the Chinese Empire.

Chinese White Wax. — (Also known as *Insect Wax* or *Pela Wax*, *Vegetable Spermaceti*, etc.)—A clear white wax, the joint product of an insect and one or more trees.

In Keenchang, on the Thibetan frontier of China, flourishes an evergreen tree known as *Ligustrum lucidum*, and in the spring myriads of small brown flies, called by entomologists *Ericerus pela*, swarm on the twigs of these trees.

The branches soon become covered with a white soapy incrustation—supposed to be an exudation of the insects in a state of disease, which increases until autumn, when the sprigs are cut off and immersed in boiling water. The water is kept boiling some time to destroy the insects, or larvae, and the viscid substance which rises to the surface is skimmed off, melted, and then allowed to cool in deep pans. It thus forms a beautiful white, translucid, brilliant, inodorous, insipid body. It is not greasy to the touch, and is harder than bees' wax. It cracks between the teeth, crumbling to a non-adherent, dry powder.

It has been found that by removing a little of the larvae in the spring from Keenchang to other trees in the rice district of Chia-ting, the flies being enormously prolific, increase amazingly, and the waxy deposit is considerably augmented, every pound of larvae producing 4 or 5lbs. of wax, which is worth a dollar per kilogramme at Shanghai. The process is repeated every year, and the crop of this wax, some 200 tons, yields about £650,000 annually.

Exported from Shanghai and Hankow in large round cakes.

It is often adulterated with 15 to 20 per cent. of water, which causes it to lose its lustre, and to become dull and more or less opaque.

It melts at 84° C. or 184° F., and is used in candle-making, sizing of paper and cotton goods, glaze for silk and polish for furniture, stones, etc. When genuine, this beautiful wax resembles bees' wax in its chemical composition more nearly than the vegetable waxes, and although, on account of cheaper substitutes, very little of it now comes to England, it is much used in Eastern countries, both in the making of wax candles and in medicine. It is said to have ten times the illuminating power of other waxes.

Chinois. — A dwarf species of oranges, which are grown to some extent about Nice, in France, but mainly in Spain, Algeria, Malta, Italy, and Corsica. They are cut up and preserved in several ways, sometimes in brandy and syrup, for sale in short-necked bottles, sometimes as jam and sometimes crystallised. (See *Crystallised Fruits.*) They are usually designated as *Chinois verts* or *Chinois blonds*, according to the colour given them in preparation.

Chittas. —See *Melons.*

Chives or **Cives.**—F. *Civette;* W. *Cenin syfi.*

The smallest variety of the onion or leek tribe of vegetables, with small flat bulbs, which grow in clusters. The botanical name of the chive is *Allium schænoprasum.* The leaves are often used for flavouring soups, stews, hashes, etc., and the young plant is also used instead of spring onions in salads.

Chloride of Lime.—(Also known as *Chlorinated Lime, Bleaching Powder,* and often improperly called *Chloride of Calcium,* which is a very different thing.)—A dry white powdery substance with a slight acid smell, prepared by the action of chlorine on dry slaked lime. It is composed of chlorine, 36·23; lime, 36·77. When exposed to the air it takes up carbonic acid and gives off *Chlorine,* which destroys bad smells. It decomposes about twice as rapidly in the open air as in a room, and solutions of it alter about six times sooner in light than in darkness. It is used for purifying drains, closets, sewers, etc., but chiefly for bleaching cotton, linen, clothes, paper, etc. Thousands of tons are made at Newcastle-on-Tyne, but St. Helens and Widnes in Lancashire are the main centres of production. Originally a by-product in the manufacture of washing soda, it has become one of the chief chemical industries, and washing soda itself is now merely a by-product of bleaching powder.

Chloride of Sodium.—A technical name for common salt.

Chlorinated Soap.—A medicinal soap made of Castile soap and chloride of lime mixed together with rectified spirit. One of the most powerful agents known for removing stains from the skin and for preventing contagion by contact. Largely used in hospitals, etc.

Chlorodyne.—A compound of chloroform, morphine, and hydrocyanic acid.

One popular anodyne of large sale is a dark brown, slightly turbid and viscid liquor, smelling strongly of chloroform, and containing about 15 per cent. of chloroform, 2 grains of morphine to the fluid ounce, a minute quantity of prussic acid, a little oil of peppermint, treacle, and hot spice, or Indian hemp.

It is said the sale of chlorodyne, chloral, chloroform, laudanum, etc., to ladies is becoming as common as that of alcohol to men.

Chlorophyll.—The technical name for the bright green colouring pigment, as noticeable in most leaves and plants. It can be extracted and prepared as a colouring substance for tinting oils, soups, grease, etc. Some commercial kinds are adulterated with aniline, malachite, and chrome-green, while others are prepared from poisonous substances. The best are harmless and do not change colour readily. They are sold soluble and either in oil, spirits, or water. Prices, 4/11 to 6/11 per lb.

Chocolate.—Da. and Du. *Chocolade;* F. *Chocolat;* G. *Chocolade;* It. *Ciocolata;* Port. and Sp. *Chocolate;* Rus. *Schokolad;* Sw. *Choklad.*

All these names have been derived from the Aztec word "Chocolatl," a beverage made in Mexico ages before that country was conquered by the Spaniards.

When Humboldt discovered the use of the cocoa plant he little dreamed of the immense consumption that was to follow the concoction of his first cup. It is to-day fairly in the way of becoming one of the principal foods throughout the world, and tends eventually to supplant both tea and coffee as a beverage. As a flavouring it already ranks second to vanilla, and in England is decidedly before it, for it is now used in all branches of cookery, pastry, creams, and so forth.

It is a significant fact that thirty years ago the consumption of chocolate was limited to a few of the larger towns in this country, and in the rural districts was comparatively unknown.

The taste for it seems to be an *acquired* one, and people have really to be educated to the love for it. Like tobacco and beer, it is at first distasteful and even nauseating, but when once the use of it has begun it is seldom afterwards absent from the household, and probably tires the taste less than any

other confection. Chocolate is also one of the most healthy foods known at the present day, and as prepared by two or three of our leading English manufacturers (Fry or Cadbury for example) may be used to any extent without harmful effects, but rather the reverse. Modern chocolate, like cocoa, is prepared from the roasted seeds of *Cacao Theobroma*, or Cocoa Nibs, as they are generally called, and mixed with sugar, sago, arrowroot, ground arachis nut, potato flour, maize-flour, or other similar farina.

It is often also coloured and perfumed with other substances, such as vanilla, cinnamon, cloves, musk, ambergris.

French Chocolates (excepting those made by the Compagnie Francaise) contain but little flavouring, and that generally vanilla.

They are manufactured with the best machinery and long enjoyed a reputation over most other makes, but great attention has been paid to the manufacture of chocolate goods in England during the last few years, and many of them, especially those of the firms named, are now undoubtedly superior to any made abroad.

We believe Fry's business was first established in 1728. A hundred years ago their first little *steam factory* was puffing away making the then famous "*Churchman's Chocolate.*" Now they are probably the oldest and largest manufacturers of chocolates in this country, if not in the world, and certainly no other firm produces such a constant stream of novelties.

Chocolat de Santé (health chocolate) is a French term for chocolate free from vanilla or other added flavour.

Menier's Chocolate is reputed to be all made from cocoa grown in the district of Rivas, Nicaragua.

In Belgium it is illegal to label mixtures as "*Chocolate,*" or even to sell as "pure" cocoa from which any of the fat or butter has been removed.

Cheap sorts, unfortunately, heavily and basely adulterated with unwholesome ingredients, are still put on the market by unscrupulous makers. Chocolates are, of course, always understood to be compounded confections, but there is no excuse for lime, ground lentils, maize, and bean flour, foreign wax and oils, various gums, cinnabar, red earth, and even *red-lead*, and pichurin or sass-afras beans. There is really no generally accepted standard definition of what chocolate should consist of, or to what limited. Coker-nut stearine, to the extent of 30 per cent., has been found in some of the cheap makes.

The Customs revenue from imported chocolates only amounts to about £1,600 a year, the duty being 2d. per lb. on the percentage of chocolate excluding other ingredients. When alcohol is used an extra spirit duty of ½d. per lb. is also charged.

In October, 1893, there were sold by auction in London about twenty tons of so-called *chocolate creams*, said to be made from locust nuts and chicory, with a small quantity of prepared cocoa-nut oil! A dealer caught re-selling the stuff at 1½d. per lb. was fined £25 and costs.

Shopkeepers often lose heavily by these cheap rubbishy fabrications, which when freshly made may appear of fair quality, but soon become hard, nasty, and unsaleable.

Good chocolate should dissolve readily in the mouth, without grittiness or rancid flavour. Perfumed chocolates may always be suspected as being intended to cover or disguise inferior cocoa or added substances.

The superior and delicate flavour of fine cocoa should be learnt by all retailers who study excellence in their goods.

For *Gaboon Chocolate*, see "*Dika-bread.*"

Spanish chocolates are, in the Pyrenees, commonly made by day labourers hired for the purpose by the village housewives, who supply the cocoa, sugar, and other ingredients. The Spanish are large consumers of chocolates, and like them highly flavoured with vanilla, cloves, cinnamon, musk, or ambergris. Each village has its two or three chocolate workers.

Chocolates are consumed either in the slab or tablet form; scraped and made into beverages; or, in combination with farina and other ingredients, made into sweetmeats of endless fanciful forms.

In preparing it as a beverage the solid chocolate is usually scraped very fine, worked into a stiff paste with milk, and carefully boiled. The pot is then filled up with more boiling milk, and well stirred or twirled into a foam or froth by a notched wooden instrument. It is then ready for pouring into the cup and sweetening as desired.

"*Confectioners' Chocolate*" should be made pure and unsweetened, and melt very readily with dry heat.

Low priced makes are, of course, to be had, but these are generally heavily mixed with farina, sugar, etc., and produced from the inferior grades of cocoa.

Leading chocolate manufacturers:—Cadbury Bros., Bournville, Birmingham; Compagnie Francaise, London Works, Bermondsey New Road, London, S.E.; James Epps & Co., Ltd., Holland Street, London, S.E.; J. S. Fry & Sons (makers of all kinds), Bristol.

Chocolate Creams.—These popular sweetmeats consist of a white creamy interior, coated thickly or thinly with chocolate paste.

In making them, the inside portion is made first from the same cream as is used in fondant making, viz., beaten sugar (see "*Fondants*"). The "cream" is run into starch moulds, and when set, the centres are sifted out. These small centres are now generally covered with chocolate in the following way. Each operator has a small wire cup with which a centre is picked out of a pan of soft chocolate. This is drained and placed on a board, securing a flat bottom, and a dexterous turn of the wire before it leaves the sweet, secures the little curl on the top which is the certificate of good work.

In some of the best factories the creamy substance is made of cacao butter, farina, and sugar; but the cheaper qualities are often made of Danish stearine, wax, etc.; and are apt to turn quite hard when kept a short time; whilst the "chocolate" covering is a mere skin made up from various substitutes coloured and flavoured in imitation of chocolate. These latter should never be stocked by retailers who respect their trade.

Chow-chow. — A Chinese, or Pigeon-English, word for mixed or miscellaneous. Hence the name given to a preserve made in Southern China of orange peel, ginger, bamboo, pumelo-rind, syrup, etc.

But the true *Chocho, Choco, Chavote*, or Chow-Chow is the firm fleshy fruit of the plant *Sechium edule*, and may be obtained fresh in our markets from time to time, especially about Christmas. (See *Chavote.*)

"*Chow-Chow Pickles*" are a kind of mixed pickles made with mustard and spices in the East Indies and imitated in England. Ordinary *Piccalilly* may be converted into a very good Chow-Chow by a liberal addition of curry powder to the other ingredients.

Chowder.—See *Clam-Chowder.*

Christmas Fancies.—Under this name a considerable business is done in certain emblematic and decorative plants, branches, berries, etc. Holly and mistletoe, etc., contribute materially to the attraction of many other shops besides those devoted chiefly to the products of the garden.

The custom of hanging-up emblematic plants, such as mistletoe, *viscum album*, on Christmas Eve is of Druidical origin. They regarded it with extreme reverence and wondrous healing powers. The cutting of it from the oak was an occasion of great ceremony. When the oak was reached on which the mistletoe grew the white bulls were bound to the tree, and the chief Druid, clothed in white (the emblem of purity), ascended, and with a golden knife cut the sacred plant, which was caught by another priest in the folds of his robe. Bulls, and even human creatures, were then sacrificed as a propitiation to their gods. Festivities of various kinds followed, after which the mistletoe was distributed among the people, who hung up the sprays over the entrances to their dwellings as a

mark of gratitude to the sylvan deities during the season of frost and cold.

Mistletoe is a parasitic plant, growing on apple, willow, poplar, and other trees, the seed being transported by the agency of birds.

The growth of the mistletoe is rather curious. It may be said to exist in co-operation with the tree that supports it, because if the tree nourishes it partly during the summer, the mistletoe nourishes the tree in winter.

The growth of the mistletoe on the oak is now of extremely rare occurrence, but in the orchards of the West Midland counties of England—Gloucester and Worcester especially — the plant flourishes on the apple trees; these being made to produce far more mistletoe than apples. Large quantities are cut at the Christmas season and despatched to London and other places from all the Western counties, while it comes by the hundred crates every December, *viâ* Cherbourg, St. Malo, and Granville from the Normandy orchards. The plants used for decorative purposes at Christmastime are naturally emblematic. The *laurel* or *bay* has from the time of the ancient Romans been dedicated to joyful commemorations, and its branches have been used as the emblems of victory and joy. Its use is, therefore, obvious at the Christmas season, when gladness and peace abound. The *holly* is held in peculiar veneration at this period of the year. So much has it identified itself with the season that we very often speak of it as "Christmas." This plant has no doubt recommended itself for decoration because of its attractiveness, with its smooth and shining exterior and red berries, suggestive also of wisdom in many ways. Well berried bushes, which for the birds denote a severe winter, fetch good prices. Most of that reaching the London markets is sent from Surrey; but all parts of the country contribute to the annual demand.

The *rosemary*, besides its rich fragrance, was supposed to possess many occult virtues, and was used on occasions of both rejoicing and mourning. It was believed to clear the head, strengthen the memory, make touching appeals to the heart, give hope and joy, and a thousand things. For those reasons it was borne both at weddings and at funerals.

Christmas Poultry.—See *Poultry Trade, Turkeys*, etc.

Chuan.—A small seed of yellowish green colour resembling worm-seed, brought from the Levant, and chiefly used in making carmine.

Chufas or **Tiger Nuts**—These nuts, also called *Earth Almonds*, are the edible tubers or fibrous bulbs of *Cyperus esculentes*, a sedge-like plant, native of the Mediterranean shores, and are now cultivated in many regions, especially Spain. Chufa is the Spanish word for tiger. They have a nutty taste, and are very sweet. The juice is largely used in flavouring margarines and the lower priced "condensed milks."

Chumps.—See *Dutch Vegetables.*

Chuno.—A national dish which the Peruvians make from frozen potatoes. The potatoes are steeped for a little while in water, then exposed for a few days to a sharp frost, washed and rubbed. By this method the peel becomes detached, and the starchy matters are dried in the sun or in an oven. The dried tubers are then cut in thin slices and baked, and afterwards eaten, with the addition of Spanish pepper.

Churchman's Patent Chocolate.—This is a very old brand of chocolate, probably the oldest in existence. Mr. Churchman patented his production about 150 years ago. The works were at the Castle Mills, Bristol, where he used a *water engine*. He was succeeded by Joseph Fry and John Vaughan, predecessors of the present firm of J. S. Fry & Sons.

Churl's Treacle.—See *Garlic.*

Churrus or **Charas.**—See *Bhang.*

Chutney or **Chutnee.**—A variety of Indian pickles, condiments, or relishes compounded of sweets and acids, mild and sour. Very popular throughout India. Bombay is a great centre for their manufacture, but imitations are

produced in England; the latter are made from pickled or dried materials, and often very coarse, fibry, and inferior.

The ordinary ingredients used in India are ripe fruits and other horticultural products grown in India, such as mangoes, tamarinds, cooca-nuts, raisins, etc., while in fresh condition, with spices, sour herbs, cayenne, and lime-juice. They are usually either cut up in slices or pounded and boiled together, and either used immediately with curries or stews, or put up in pint or quart bottles for keeping.

To make an *Imitation Chutney*:—Take 1lb. brown sugar, ¼lb. powdered white sugar, ½lb. salt, 2 oz. garlic, ¼lb. onions, ½lb. mustard seed, ½lb. raisins (stoned and chopped fine), 1½ ozs. ground cayenne, 3 pints vinegar, and 5lbs. apples.

The mustard seed should first be washed and dried, the garlic, onions, and apples peeled, sliced, and reduced to paste in a mortar, then boiled into a pulp with the vinegar. When cold mix in all the other ingredients, and blend them well together. Bottle in wide-necked bottles, cork well, and keep air-tight for three or six months till required for use.

Of course all imitations are much inferior in aroma to the genuine, made from the widely-famed gardens of the East. The best known kinds are described under their alphabetical headings: — *Bengal Chutney*, *Cashmere Chutney*, *Colonel Skinner's Chutney*, *Lucknow Chutney*, *Madras Chutney*, *Mango Chutney*, *Tamarind Chutney*, and *Tirhoot Chutney*.

Calcutta Howrah Chutney is of a mild character, composed of several mixed fruits cut into small pieces.

Indian Mixed Fruit Chutney is very similar, but rather sweeter and warmer; so is *Pine-apple Chutney*, only this last is much sweeter.

Rajahas Chutney. — A delicious variety in paste or pulp form, made moderately sweet and warm.

Major Grey Chutney is a pale, clear kind cut in slices, sweet and mild.

Sliced Chutney is, as its name implies, cut into slices, but is moderately hot and sour.

Chutneys are mostly used with cold meats, but they may also be used advantageously with hot meats, chops, steaks, hashes, fish, etc.

Special Importers.—Charles Cocks & Co., Reading; Allen Jeeves & Sons, Seddington, Sandy, Beds; J. A. Sharwood & Co., Ltd., St. George's House, London, E.C.—the largest dealers in the world.

Chutney Sauce.—A very good one is made as follows:—Take 2 quarts vinegar, 3 quarts green gooseberries (full grown); boil the berries in 3 pints of the vinegar till tender, and into the other pint of vinegar mix 1lb. of sugar to form a syrup. Then take ¾lb. of salt, ½lb. currants, 2 ozs. fresh chillies, 2 ozs. garlic, 1 oz. ground ginger, 1 oz. grated nutmeg, 1 oz. ground allspice, 2 ozs. mustard, a teaspoonful of ground mace, and 2 of cayenne.

The garlic and chillies to be pounded in a mortar, and all the ingredients to be well mashed up and strained through a sieve. Add 2 ozs. of ground turmeric to colour it. Fill into wide-mouthed bottles and cork well. It may be used in an hour or will keep for years.

Cibol or **Ciboul.** — See *Shallots*, *Leeks*, etc.

Cider or **Cyder.** — F. *Cidre;* G. *Zider*, *Apfelwein;* It. *Cidro;* Rus. *Kvas;* Sp. *Cidra;* W. *Afel-lyn.*

The fermented juice of apples. Three sorts of apples—sweet, bitter, and sour—are commonly used in cider-making. The first gives flavour, the second body, and the other the necessary acidity. Either of the two first sorts may be used alone, but not so the third; the best cider is made from a judicious blending of the whole three sorts.

The production of this beverage dates back to ancient history. The Romans, as also indeed the Greeks and Egyptians, had their wines made from apples and pears, and the contemporaries of Pliny and Diodorus Siculus valued highly the juice of the apples from Gaul.

In the 6th century cider had become a common drink, especially among the lower classes, though not exclusively with them, for St. Radegonde, Queen of France, held it in high esteem, and had it served daily at her own table.

The Biscayens also knew cider and obtained grafts of various kinds of apples, the juice of which was found superior to similar productions of the period. It is now one of the chief productions of the Pasajes province in Spain.

Normandy was the first to popularise cider as a drink. Thence it spread to Picardy, Flanders, Germany, Russia, England, and finally to America. Ever since the 14th century the Norman juices have been the most celebrated, and even to-day her ciders are considered the finest in the world. Nearly all the cider made in France is in the departments which have been formed out of the ancient provinces of Normandy and Brittany.

It is a curious fact that the least juicy apples afford the best cider, and the apples most suitable are the late kinds, rough, sour, and disagreeable to the taste.

Acid apples give an abundant clear and light juice, but the cider which is made from them is liable to turn black, and it is weak and generally difficult to keep.

Sweet apples also give an abundance of clear cider which is agreeable to the palate as long as it is new; but as soon as the sugar is absorbed it ferments, and goes sour, contracting a bitter taste, which renders it flat and unpleasant for a drink. Another kind of sweet apple gives as clear a liquid as the preceding, but the presence of a quantity of alcohol in the sugar renders it stronger and better adapted for keeping. Finally, *bitter* or *sour* apples give the most generous cider, which is of a fine colour and keeps well. The cider obtained from a blending of bitter or sour with sweet apples is very light and agreeable, and keeps fairly well.

After sugar, tannin is the most important constituent of an apple, and it plays a role of incontestable utility. Bitter apples contain the most tannin. They should be just ripe, because the amount of sugar in ripe apples is 11·0 while in unripe it is but 4·9, and in over ripe only 7·91. They are generally gathered in September—the nearer to cold weather the better the cider will keep—and left a few days to mellow, then ground in a mill, and the pulp or "must" is squeezed in a press through canvas or hair bags. The juice runs into a cask with an enlarged bung-hole and is made to ferment and froth over for four to ten days till most of the yeast has gone off, after which it is racked off into clean casks or bottles, kept air-tight, and allowed to rest till spring when it is ready for drinking. Good cider contains 5 to 10 per cent. of alcohol. *Hard Cider* is cider which has lost its sweetness from over-fermentation.

German Champagne is merely a sweet sort of sparkling beverage, manufactured out of American or French apples by an addition of water and with the help of certain chemicals.

Champagne Cider is described under its own heading.

Sweet Cider.—Cider before fermentation, or which has fermented very little.

Water Cider or *Ciderkin* is a kind of weak cider made by adding to the apple pulp or *marc* half its weight of water, and then expressing the liquor a second time.

In England about 12,000,000 gallons are made yearly, the counties of Hereford, Worcester, Devon, Somerset, Gloucester, and Norfolk being most noted, where a ton of apples, value £5 to £10, will produce about 200 gallons of cider.

Cider is very popular in France, and is the common drink in the north-western part, from Amiens to Nantes and Brest, the annual yield being about 250,000,000 gallons. That from Normandy is often sold as *arrack*. Apples in France are usually about £5 per ton, but large quantities of American dried apples are also used in cider-making, because they are richer in saccharine matter than green apples, also cheaper in price and transit. The

nature of the soil has, doubtless, much to do with the excellence of ciders, but science and art have also lent their aid. Normandy apples are now bought up largely by German cider-makers in Frankfort, and the product then exported to all parts of the world. Germany grows hardly any apples, but she exports ten times as much cider as France!

Very good cider is also made in Cork, Waterford, and other counties in Ireland. Large quantities have been sent to this country from the United States these last few years, where the best is made from the Hughes or Virginian crab-apples. These are little more than twice the size of wild crabs, are not remarkable for quantity of juice, and are entirely destitute of any good edible qualities, but produce a cider that will command double the price of that made from the best table apples. The *Harrison*, a yellow apple, twice as large as the above, comes next as a cider apple, and makes an excellent quality.

From time immemorial there have been districts in England in which the wine of the country has been *cider*, but this has now almost ceased to be; and the decay of this once flourishing industry is much to be lamented. The kinds of apples which were once renowned for cider-making are now almost unknown, save in the orchards and gardens of a few; whilst farmers and others have to a very great extent given up the production of this healthy and exhilarating homely beverage.

The farmers of Herefordshire are not now making such good cider as they did years ago, although that county is particularly suited to the fruit. They do not take sufficient trouble to keep the varieties separate when grinding up the apples, or to throw out the rotten fruit, but usually smash all up together.

In the Weald of Kent they seem to have lost the true art of cider-making, for they put sugar in it, which is a great mistake. About Swanley and certain other parts of Kent good cider is made, though different in character to that of West-country make.

In 1894 Mr. Radcliffe Cooke, M.P. (a Herefordshire man), and Sir George Birdwood addressed letters to the *Times* on the subject of cider and cider-making, which called forth various suggestions and inquiries, resulting in the founding of the "National Association of Cider Makers." In September and November, 1895, the subject again cropped up in the same journal, showing that an endeavour was being made to turn Kent into a cider county. Technical education has suggested that the cider-maker should know something of the theory of fermentation and the scientific principles which underlie the business, for some makers have even made the mistake of selling the pick of their apples and using the bruised fruit and windfalls for cider. The old people, it is true, worked by rule of thumb, but recipes were handed down from generation to generation, and when a Devonshire man spoke of his cider apples, he meant not merely a particular sort but the pick of that sort.

Unfortunately cider travels badly, hence in our large towns most of it is mixed with water, treacle, alum, etc. The best is generally sold in bottle.

Cider should never be allowed to freeze and thaw. When it has accidentally become frozen the liquid portion should be drawn off into other barrels and the ice thrown away.

As all our best cider manufacturers know, a good article cannot be made from defective apples, and the picking up of all sorts with leaves and dirt attached is a foolish economy and cannot be too severely condemned. It would pay the cider-maker much better to reject all unripe and unsound fruit, also to wash their apples and clean and dry them in the sun until they are a little wilted, for the more water that can be removed from them at this stage the better the cider will be.

Why should the good old English beverages of cider and perry be unobtainable in our public-houses and restaurants? Tea, coffee, cocoa, mineral waters, ales, beers, wines, and spirits stare in the face the thirsty wayfarers

everywhere, but "Cider and Perry on draught here" is far too seldom seen. The great mass of the licensed houses being "tied" to brewers or distillers, only what they make can be sold in these bars, and so cider and perry are boycotted.

When early in the seventies the late Dr. Bull and his compatriots adventured into the north of France from Hereford, taking with them the finest specimens of apples and pears and the cider and perry produced from English orchards, they left behind them a grand industry.

There is a good deal of malic acid in sour cider, but it is perfectly harmless. Cider is regarded as an excellent beverage for persons of a gouty tendency, and it is stated that rheumatism is far less prevalent in Herefordshire, Devon, and Somerset than where beer is the popular beverage.

Cider Brandy. — A cordial made from the residuum of apples and pears after the cider or perry has been extracted.

Ciderkin or **Water Cider.** — F. *Amelion.* (See *Cider.*)

Cigarettes or **Cigarillos.** — G. *Cigaretten;* It. *Cigaretti;* Port. *Cigarros;* Sp. *Cigarillos.*

There are all kinds of fancy names for cigarettes, but the tobaccos ordinarily used in them are only two, namely, Turkish and Virginian. "Egyptian cigarettes," so-called, are merely made in Cavio or Alexandria from Turkish tobacco.

The bulk of present day cigarette smokers are, however, not very critical as to quality. Quantity is the greater consideration. A few years ago every cigarette smoker made his own, but now they are mostly made by an elaborate system of automatic machinery which turns them out more cheaply than by hand—although the latter are usually preferred. A single workman with a machine is said to be able to turn out about 10,000 cigarettes in ten hours, whereas by hand it requires a clever hand to make 1,500 a day. The machines cut the paper—made very thin and tough specially for the purpose—gum its edge, measure out the proper quantity of tobacco, wrap it up, make the gummed edges stick, cut the ends, and pack the cigarettes in boxes.

Cuban "cigarillos" are usually made in large factories at Havannah, the workers being convicts (Africans, Congos, Mulattos, Chinese, Spanish sailors, etc.) contracted for with the Government. Each works and smokes with a heavy chain dangling from his waist and attached to his ankle.

Large quantities of cigarettes also come from Roumania, where labour is very cheap, and the tobacco in these is much milder than the American growths.

According to the *Monde Economique*, potato leaves have recently come into competition with tobacco for making cigarettes in the Argentine Republic.

Cigarettes have lately come into use very extensively in this country, although they are much more deleterious to health than tobacco smoked in pipes or cigars.

There is a partiality for tipped cigarettes, especially those tipped with "gold," partly because the "tip" prevents the paper from adhering to the lips, but it is said that imitation gold and silver tips are injurious to the smoker.

Many of the low-priced kinds of cigarettes are made up chiefly, if not entirely, of paper which has been steeped in tobacco water and then finely shredded to imitate tobacco. Old cigar ends are also used.

Cigars or **Segars.**—F. *Cigars;* G. *Cigarren;* Port. *Charutos;* Sp. *Cigarros puros.*

These are of Spanish origin. The best are made by hand and usually composed of two parts—a central mass formed of pieces of leaf of uniform quality, known as *fillers*, placed longitudinally so that the smoke may be freely drawn, and a covering formed of selected leaf of the finest colour called the *wrapper.* The only tools required are a short-bladed sharp knife, an emulsion of gum, and a square wooden disc or cutting board. A portion of the perfect leaf is first shaped to form the inner and outer wrappers, then a bunch

of fillers is moulded in the hand and rolled up tightly in the wrappers, the pointed end being secured by gumming and the other cut off straight. Old cigar stumps collected in the streets, smoke rooms, and other places of public resort are often boiled and afterwards cut up and used as "filling" for cheap cigars (and cigarettes); while the liquor is utilised as tobacco water in various ways. In America hard wooden moulds lined with tin are used for rolling the fillers for cigars, and machines for cutting and sifting scrap as stuffing are often used for making what are called "scrap-made" cigars.

It is a curious fact that the best and choicest cigars are made by men. Even in England makers do not care to employ female work-hands on any very special or ordered goods, for there is a peculiar knack in arranging the "fillers" (or inside contents) of a cigar in such a way as to bring out the flavour, and women do not seem to have acquired it. Of course there are thousands of work girls engaged in the trade, but these are only employed in turning out the inferior quality goods, where the exact lay of the tobacco is not of prime importance. For instance, every leaf must be so placed inside the cigar that the aroma cells, as they burst in the smoking, shall send their fragrance towards the mouth instead of in the direction of the outer air. As each leaf varies in its arrangement of cells there is all the difference between a cigar made by a man who appreciates this, and the one manufactured by a factory girl, working by rule of thumb. Experts pride themselves on their quickness in picking out a "female" cigar (as they term it), for the veining or direction of the outer coat will also be inexplicable, and the cigar will not burn so evenly. This is all the more surprising, as in the parallel trade of cigarette making females prove themselves the more expert and deft fingered.

Many of the cigars made in the United States are of Mexican tobacco, yet the statement is often made that these cigars are made of the Cuban leaf.

Mexican Cigars mostly come from Vera Cruz, where there are several large factories turning out very fine qualities. The leaf, grown from Havanna seed, is rich in colour, of excellent texture, good body, and exquisite aroma.

Continental Cigars.—These do not appear to possess any superiority over British manufacture, unless it be a firm at Antwerp, which has long enjoyed considerable reputation for its cigars made of Havanna leaf and after Cuban methods.

Havanna cigars of the choicest make surpass all others. They are all professedly made of the best Cuban tobacco; but the growth of this quality is limited, and although excellent for smoking it is very rough; so that the leaf used as wrappers for the finest quality of cigars is grown in Connecticut, and, indeed, most of the cigars now made in Havanna are really made of Mexican or American tobaccos, which are regularly shipped to Cuba for the purpose.

Mexican leaf does not, however, suit for outside wrappers. A short time ago *Mexican made cigars* were exported, but they failed to give satisfaction, owing to the remarkable quick ripening of the tobacco during the short transit even from Vera Cruz to New York. Claros became "*maduros*" or even "*oscuros.*" It was found that boxes marked "Colorado," "Colorado Claro," and even "Claro," when opened, contained "maduros" or "oscuros." Practically no "wrapper" leaf is now grown in Mexica, but all "filler." This is a virtue to those who like a strong cigar, easily smoked, but it is a defect for the general smoker who likes a milder article which he can smoke all day.

But Mexican leaf may now be said to have taken the place formerly held by that of Cuba in the manufacture of three-fourths of these cigars. Curious to say, tobacco of the Havanna quality can only be raised in Mexico, its tobacco region being 100 times the extent of Cuba and the soil from 8 to 20 or 30 feet deep.

Most of the Continental so-called "*Havanna cigars*" are made by children, and numbers of cases of

cigars sold in Europe as of Cuban origin come from Key West, off Florida, where there are about 125 factories employing 6,000 to 7,000 workmen. On piece-work a man there makes about 1,000 a week, receiving 14 to 40 dollars per 1,000 according to brand. Sorters, testers, and packers get as much as 30 dollars a week.

Manila Cigars.—These old favourites still retain their charm for smokers. Grown in the Philippines, the leaf is soft and delicate, smooth, but quite tenacious, and burns to a fine ash. These cigars used to be all made by the natives at their own homes, but now there are several factories in the islands, and labour is very cheap. Manilas are usually rolled straight, and may be had in our large towns at about 4/- per lb., which, with duty 5/- per lb., means 9/- per 100 cigars to retail at 2d. each. The 3d. brands, "Capitan General," "Hessiana," etc., have long been esteemed for their silky texture, sweetness, and rich aroma; and, instead of being packed in boxes of 250's and 500's only, are now to be had in 100's. (See also *Manila Tobacco.*)

The names and descriptions of cigars, even those of English manfacture, usually appear in foreign languages, chiefly Spanish. There is consequently much misconception as to the meaning of the words used. It should be noticed the following refer to size or shape only:—

Concha or Conchas	Planters
Concha Finos	Princesa
Concha Frabucos	Princesa Reinas
Concha Victoria	Principe
Conchitas	Quadrados
Elegantes	Reg Princesas
Imperiales	Regalia Brittannia
Infantes	Regalia Preciosa
Londres	Regalia Reinas
Londres Chico	Reina Victoria
Manilas	Reinas
Media Regalia	Trabucos
Non Plus Ultra	Victorias

Colours are indicated by *Madura* (dark and strong), *Madura Colorado* (light brown), *Colorado* (lighter brown), *Colorado Claro* (very light and mild). Cigar boxes are usually made of Spanish cedar grown in Cuba. This wood always retains the flavour of good cigars, and some connoisseurs say it improves it. The boxes also are often marked *Flora Fina* (fine flower), meaning first quality, or *Flor* (second quality); but these terms are now used indiscriminately, and are merely fanciful embellishments.

Britishers are becoming, year by year, more and more a cigar consuming people, but it is not creditable to British firms that they should so slavishly copy the brands of Mexico and elsewhere as they do. Imitation is the sincerest form of flattery, no doubt, but more originality would be preferable.

The best Havanna cigars are too costly for most people, so that Europe caters for the average smoker of moderate means, and the Continent sends us about 80 million cigars every year. For in the United Kingdom cigars have to be made under the eye of Excise officers in specially licensed premises and under cast-iron factory Acts; but on the Continent most of the cheap cigars are made in domestic garrets or unhealthy cellars. One might think this would prejudice British smokers in favour of the home article, but quite the contrary. British cigars are not fashionable, and if purchased, the label or name on the box must be erased or altered. The average smoker pretends he cannot enjoy a cigar made in England, yet call it a Havanna cigar, and he will discourse for hours on its peculiar merits and delights.

Nevertheless, the quantity and value of British cigars has nearly doubled within the last 20 years, and really a cigar made, for instance, from high-class Indian fillers, blended with a smooth and nice Sumatra or Borneo wrapper of fine quality, can scarcely be beaten.

The 2d. cigar, weighing 1¼lbs. to the 100, is the most popular, and the chief reproach against them is not so much inferiority of flavour, but that the insides are too often stuffed with odds and ends of leaf instead of using long fillers, which reach from one end of the cigar to the other.

Indian Cigars.—In place of the long *Trichinopoly Cigars*—with a straw

through the middle, the *Supers* and *Musters*—strong, black, and coarse, of some 30 years ago, we now receive from India the mild "Flor de Dindigul," which, made in the town of Dindigul, near Calcutta, in shape, if not in flavour, are quite equal to Havanna cigars. So also are some of the *Borneo Cigars*, especially the brand "*La Flor de Brandigas*," which have become special favourites, and are only about half the price. India seems better adapted than England for tobacco and cigar production, for the leaf may be of the best, yet a damp climate materially affects its virtue, when cigars are made of it. The leaves used for the outside wrappers of British cigars depending more on the appearance than the taste—more on good looks than flavour—are nearly all grown in Borneo.

Cigar Importers.—E. H. Skilton, 6 Wellington Street, Hull; The General Shipping Co., Ltd., 1 Lombard Court, London, E.C. (see adv. end of book).

Cinchona. —See *Quinine*.

Cinnamon. — Ar. *Darsini*; D. *Kaneel*; F. *Cannelle*; G. *Zimmet, Kanehl*; It. *Cannella*; Per. *Darchinie*; Port. *Canella*; Sp. *Agriaz, Canela*; W. *Canel*. (See also *Canica*.)

In Austria, Germany, Hungary, and Russia, cassia bark is official under the name of Cinnamon; and in the Danish, Dutch, Spanish, Swiss, and United States Pharmacopœias both cinnamon and cassia are official under the name of Cinnamon; but in the United Kingdom cinnamon must be the bark of *Cinnamomum zeylanicum*. This is an aromatic species of laurel which grows in Ceylon, Sumatra, Borneo, and is also cultivated in Guinea, St. Vincent, Jamaica, Brazil, Mauritius, Pondicherry, Guadeloupe, and Java. The tree grows 20 to 30 feet high, and has a trunk about 18 inches thick; the leaves are oval-shaped, 4 to 6 inches long, and the flowers are of a silky-grey colour outside and of pale yellow internally. The fruit is of acorn shape, and is brown when ripe. The trees reared from seed commence yielding at four years old, but arrive at their prime when about twelve, and will continue producing bark till perhaps 200 years old. In preparing the bark for market the epidermis is scraped away, and the inner bark is cut up in slices, and as they dry in the sun these curl up into rolls, the smaller quills being afterwards inserted into the larger quills. They are finally made up into bundles or bales, about 90lbs. each, and wrapped in double gunnies.

BRANCH OF CINNAMON TREE.

The bundles are about 100 cm. in length by 6 to 9 mm. in diameter, made up of quills about 30 cm. long, the pieces being made to overlap, in order to make up the bundles of uniform length and the smaller and broken pieces being packed in the interior.

There are at least ten different varieties of cinnamon bark, and that known by the Cinghalese name of *Penne* or *Rasse kuroondu* is said to be of superior quality.

Chinese Cinnamon is of two kinds. That produced in Kwantung and Kwangsi is merely the bark of old cassia trees; but a very excellent kind is exported from the Laos States, controlled by France, and brings a very high price on arrival in Canton, although nothing definite seems to be known as to its

botanical source, *i.e.*, whether obtained from the cassia tree or from a distant species.

The finest cinnamon we receive is that produced in Ceylon, and most of ours comes from there. It should be of a light yellow colour, almost thin as paper, pliable (first bending and then breaking splintery), smooth, and shiny.

The outer corky layer having been removed during the process of preparation, only traces of the cork cells remain. The quills are marked externally with fine lines, pale and wavy, and with small scars or holes, indicating the position of lateral twigs or leaves. On the inner surface the colour is rather darker. The smallest quills are the finest, and should have an agreeable warm, aromatic flavour with a mild, sweetish taste. When chewed it becomes soft and seems to melt, is not so pungent as to bite the tongue, and is not followed by any after taste. Every bundle should be carefully examined, as the true is often adulterated with inferior barks.

The one most resembling it externally is *C. obtusifolium*, but this is in larger quills, has a very fibrous fracture, and there is a flavour as of coriander.

Cassia Bark is often mixed off as cinnamon, but it may be detected by its being thicker, coarser, often covered with outer cork, and darker, and its fracture, which is short and resinous; its flavour also is hotter and more biting than cinnamon, and the pieces are rarely inrolled in each other. Cinnamon is also sometimes adulterated with clove bark and stalks, also different flowers.

Ceylon Cinnamon is grown chiefly in the neighbourhood of Colombo, although a good amount is also obtained from wild jungle bushes in the hill forests. Its collection is in the hands of a distinct caste of Ceylonese. It is often mixed with guava bark and weighted with sand.

Cinnamon "Chips" or *"Quillings"* consist of inferior fragments, clippings, cuttings, or trimmings of the shoots, and other small pieces, and usually have bits of whitish wood attached to them. Chips are mostly distilled for oil or made into ground cinnamon, and are usually sold at about one-tenth the price of genuine cinnamon.

Cinnamon is imported mostly in bales, but also in bags, parcels, boxes, and ballots.

White, Wild, or *Bastard Cinnamon* is the bark of the *Canella alba*, flourishing in the West Indies, Bahamas, and in Florida. The outer skin, or cortex, being white or silvery in appearance, and often but imperfectly removed from the inner aromatic bark, has given the name to this variety of cinnamon. The flavour is very agreeable, but more pungent and bitter than the true cinnamon. The sticks or "quills" also are not so perfectly formed.

Ground Cinnamon is sometimes adulterated with the powdered wood or twigs of the tree, and is noticeable by the presence of white particles. It is also largely adulterated with cassia and inferior species, and in this state there seems no reliable means of distinguishing one from the other, except by comparing the flavour, that of cassia being coarser and somewhat camphoraceus. Cassia is also mucilaginous. Powdered walnut shell is another modern adulterant of this spice. It is best detected by a skilful microscopist. Many persons think that Cinnamon and Cassia are obtained from the same tree, that the *outer* bark is Cassia and the *inner* bark Cinnamon; but this is not so, for although the Cassia tree is an allied species of the same family, no true cinnamon is ever found on the Cassia tree. Cinnamon may always be fairly well judged by the taste.

Cinnamon Essence.—For culinary purposes. The best is made from the essential oil of cinnamon, say one part mixed with 12 or 18 parts of rectified spirit, and agitated until perfectly united; sometimes 2 parts of carbonate of magnesium are added. Rub the oil with the magnesia. After filtering and settling for twelve hours, the clear portion will be ready for use.

Essence of cassia is often sold for it.

For a long time the Dutch monopolised the trade in cinnamon, Amsterdam being the principal sale mart; but after the British were in possession of Ceylon the

cinnamon trade fell into the hands of the East India Company.

Essence of Cinnamon is said to be a useful safeguard against influenza, because no living disease germ can resist for more than a few hours its antiseptic power.

Cinnamon Oil.—A volatile and extremely pungent essential oil of yellowish red colour, and mostly prepared in Ceylon by grinding the small pieces of inferior and waste bark, leaves or roots, soaking them several days in sea-water and then distilling.

A peculiarity, however, of the true variety (*Cinnamomum zeylanicum*) is that it really contains quite different volatile constituents in its roots, leaves, and bark, camphor being most prominent in the root oil, eugenol in that from the leaves, while the bark contains a large amount of cinnamic aldehyde and 6 to 8 per cent. of eugenol. The oil obtained from the leaves is somewhat inferior, and only valued at about 4d. an ounce; but the flowers yield an oil fully equal to that of the bark.

Genuine cinnamon oil has a delicious aroma, and is very stimulating. It fetches 1/6 to 2/- an ounce; but is often adulterated with rectified spirit or with oil of cassia. The Chinese is said to be the best and the Brazilian the worst.

Cinnamon Soap. — F. *Savon à l'Huile de Cannelle.*

A superior kind of toilet soap, composed of equal quantities of pure palm soap and tallow soap, coloured and scented. The perfume is usually made of 8 parts of oil of cinnamon, 2 parts of sassafras, and 3 parts of bergamot, but oil of cassia is often substituted for the more costly oil of cinnamon.

Citrate of Lime.—Port. and Sp. *Citrato de Lima.*

This is now considered the safest form in which the acid principle can be conveyed, and it is now mostly prepared in Italy, where citric fruits have long been very plentiful, and where a native chalk has been found fairly suitable for the purpose of manufacture; although the Creta Inglese, or Craie de Meudon, were, until very lately, considered not only the best sort of chalk for the purpose, but the only suitable kind. 2,000 lemons will yield about 80 kilogrammes of citrate of lime.

The process of manufacture is as follows:—The raw juice of inferior lemons (*i.e.*, lemons which could not be exported as green fruit) is mixed at a temperature of 80° with sufficient whiting to form a paste, wherein all the acidity of the lemons has been absorbed by the whiting. This paste is then placed in white canvas bags, which are piled up and subjected to great pressure to extract the valueless liquid part, all the essential properties of the lemon juice being retained in the chalk. The substance thus obtained is next spread out in tiers in drying chambers, artificially heated, until it crumbles away into powder, which is the citrate of lime as known in commerce. It is generally shipped in tierces containing about 10 cwts.

Citrate of Magnesia.—F. *Citrate de Magnésie;* G. *Citronsäueres Magnesia;* It. *Citrato di Magnesia;* Sp. *Citrato de Magnesia.*

The granular effervescent passing under this name is not really a citrate of magnesia at all, but a mixture of tartaric and citric acids, with bi-carbonate of soda, sugar, and a mere trace of magnesium salt. Most of the manufacturers are now careful to label it merely as "*Effervescing Citrate.*" The ordinary proportions are 17 parts bi-carbonate of soda, 6 parts citric acid, 9 parts tartaric acid, 6 parts white sugar. The active ingredient is, as stated, a mere trace of magnesium salt. In preparing it the soda is heated until it loses about 60 per cent. of its weight and rendered anhydrous. On the addition of the citric acid and by the aid of heat, over a water bath, a stiff paste is formed. This is then heated to about 212° F., which drives off the moisture till it cakes. It is then well stirred, carefully triturated, and cooled till the granules become quite cold and brittle. It is then put through a riddle, gently dried, and bottled. The final drying is best

done in the sun, as the preparation should be of normal temperature when bottled. On the addition of water it effervesces, and is an excellent aperient. Dose: 2 teaspoonfuls in half a tumbler of cold water. Made half strength, it forms a pleasant and agreeable cooling draught for children as well as adults. It should be kept in a dry place.

Gardner's patent "Rapid" Sifter and Mixer, freely used for above. Prices, from 50/- to £100. Catalogues from Wm. Gardner & Sons, engineers, Gloucester.

Citric Acid or **Salt of Lemons.**—F. *Acide citrique*; G. *Citronensäure*; It. and Sp. *Acido citrico*; Lat. *Acidum Limonorum.*

A concentrated acid obtained from several citrus fruits, but chiefly from the juice of lemons and limes, which owe their sourness to it. Messina is now a great trade centre for this article. In its crystallised state it is colourless, inodorous, very sharp in taste, and readily soluble in water.

In manufacturing it, the crude juice is first allowed to ferment, so as to separate the mucilaginous matter, then it is filtered, and the clear liquid is neutralised with carbonate of lime. (See *Citrate of lime.*)

This insoluble citrate of lime is next collected, washed, decomposed by sulphuric acid (say 9 ozs. of sulphuric acid to 1 ounce of chalk), and the fluid thus obtained is strained through a cloth strainer, and exposed in shallow pans, so that it may crystallise by spontaneous evaporation into colourless prisms. Eight ounces of citric acid may be obtained from each gallon of raw lemon juice, and one ounce of the citric acid crystals thus obtained is about equal to a pint of lemon juice.

Citric acid is also put up in a liquid form combined, more or less, with mucilage and sugar, which renders it liable to ferment; therefore, if wanted for keeping a length of time the solid acid is to be preferred.

The chief use of citric acid is to prevent sea-scurvy, but it is also very cooling, and gives a refreshing fruity taste to lemonade and other aerated beverages. It is also used in making confectionery drops, lozenges, etc. Often adulterated with tartaric acid.

Citron Peel, Rings, etc.—Du. *Sukkat*; F. *Citronat vert*; Ger. *Succade*; It. *Confetti di Cedro*; Port. *Pel de limao*; Sp. *Piel de limon.*

Citron peel consists of the thick and tender rinds of several varieties of the *Citrus medica*, a native of Asia, but now cultivated in most warm climates.

The fruit of some of the larger varieties, such as the *C. macrocarpa*, often weigh as much as 5lbs. each.

CITRON.

The sweet-rinded Citron is prepared in the simplest manner by soaking the rind in warm fresh water for a couple of days, then boiling slowly in more fresh water until tender. The water is then drained off, and the rind put into a thick syrup of the best white sugar, and boiled slowly and as long as possible without crystallising the sugar. The pieces of peel are then allowed to cool, then placed in fresh syrup, and the boiling repeated. The pieces are now almost transparent, and have absorbed all the sugar they will hold, so they are finally placed on shallow trays and dried in a warm, airy oven.

The bitter Citrons are gathered quite green and tender, cut in halves or quarters, freed of pulp, and then put into a vessel of strong brine and left there for a month. The salt water is then poured off and fresh put on. This process extracts the bitter principle from the fruit, the salt being afterwards extracted by the fresh cold water. The peel is then boiled in fresh water until a fork will easily pass through it. It is next drained, placed in an earthen jar, and white sugar syrup poured over it, and allowed to stand a few days, then boiled again, and the process repeated until it will take up no more sugar. It is finally dried, either on trays as above described, or in an "evaporator," and is generally flavoured with lemon-peel.

Citron peel is imported either ready candied from Madeira, etc., where the best quality is prepared in large quantities, or in salt and water, to be afterwards candied in this country or used without candying.

Citron peel is less acid than the lime or lemon fruits, has a tendency to prevent vomiting, and excites the appetite; hence its value in rich cakes, Christmas puddings, sweetmeats, punch, negus, etc.

Citrons.—F. *Citrons;* G. *Citronen;* Port. *Limoes;* Sp. *Limones.* (See also *Cedratur*, *Candied Peels*, etc.)

The name "Citron" is said to be from the town of Citron, in Judea.

C. aurantium probably so called from the Latin *aurum* (gold), from the colour of the fruit.

C. limetta (the lime) is derived from the Persian *Limu*, the fruit having been introduced into Europe from Central Asia.

C. bergamia is only a variety of the above. It yields the bergamot, a fruit similar in shape to the bergamot pear, and takes its name from Bergamo, a town in North Italy.

C. medica.—The name of this species is probably derived from the Arabic *Laymum*, a lemon. *Medica* is the Latin for Median or Assyrian, which appears to indicate that the lemon was originally obtained from the East.

Citrons are the fruit of a low evergreen tree (*Citrus medicus*) which belongs to the same genus as lime, lemon, shaddock, and orange trees, but most closely resembles the lemon in smell, taste, and colour. The pulp of the fruit is subacid, and the rind thick, spongy, and very fragrant, and much more valuable than that of either lemons or oranges. Twelve well-known varieties are grown in Italy and about twenty in France. Immense quantities are grown in Naples and Sicily—especially on the sunny slopes of Mount Etna; and citron juice made at Messina is exported to all parts of the world. The largest variety are distinguished as *Cedraturs*, and come from Corsica.

Mr. Consul Drummond, writing from Ajaccio, says:—"I attribute the size, aroma, and general superiority of the Corsican citron (or *Cedratur*), which always commands a higher price in the market than that produced in other countries, in a great degree to the soil of Corsica; which, being not only extremely rich in ferruginous qualities, is also strongly impregnated with the various salts and chemicals necessary for the production of the numerous aromatic plants with which the island abounds. This is palpably evident from the natural growth on the hillsides called 'maquis,' consisting, as it does, largely of myrtles, cystus, wild lavender, heaths, arbutus, and a variety of highly-scented plants and shrubs, which in spring and early summer not only impregnate the whole atmosphere with their delicious aroma, but can also be recognised for some distance at sea when the wind is off the shore, thereby causing the land breezes to truly merit the term "balmy" so frequently applied without nearly so much justification. Another requisite for the successful growth of the 'cedrat,' or, as we term it, citron tree, is perfect shelter from the mistral, or north wind, as well as absolute protection from frost; these *desiderata*, together with plenty of sun, and an adequate supply of water having been obtained, a good crop should be looked for if constant care and attention are given, proper manuring at the right seasons carried out, water supplied

artificially morning and evening during the dry season, and the various diseases to which the tree is subject watched for and attended to in due time. The site usually selected in Corsica for the plantation or garden is a sheltered valley, at an altitude of not more than 200 feet to 300 feet above the sea level, facing south or south-west, the north and north-east winds which blow strongly during the winter months having to be carefully guarded against; or an equally well-placed hillside not too much exposed. A constant supply of water is an absolute *sine quâ non*, this being usually ensured by damming a small rivulet, should there be no spring in the neighbourhood, and constructing reservoirs and tanks of size proportional to the area to be planted, which is never large, its extent being usually limited by the local conditions, and extending from a few square yards to as much as three or four acres on rare occasions. A space of at least twelve to sixteen superficial yards being requisite for each tree, naturally limits the number of trees to the space available. In many places in the Cap de Corso district, in the northern peninsula of the island, where the natives are a harder working people and more intelligent than in the south, the gardens are surrounded by high stone walls, divided by inner walls, and again subdivided by stiff fences of dried brushwood, closely wattled. No more than four trees sometimes occupy these small plots, to which the soil has at times been brought in baskets at the cost of much time and labour, in order to take advantage of a sheltered situation. This careful protection is seldom seen in the southern portion of the island, the lazy character of the people resting satisfied with what nature has done for them by way of situation, shelter, and supply of soil and water. Frequently in the Cap de Corso and Balagna districts, the principal fruit-cultivating regions of Corsica, the trees are protected during the winter by branches and mats spread from wall to wall, and in nearly all cases a piece of stiff wattled brushwood is erected as a protection above the walls. The produce of the cedrat tree naturally varies in the amount and size of the fruit, according to the situation of the garden, the soil, and the care and attention devoted to it by the grower; but a single tree of matured growth frequently returns as much as £10 to £12 per annum. These figures alone show how remunerative a culture that of the citron may be made, although the original outlay for making the garden, which is nearly always terraced, frequently involving considerable labour for masonry, walls, etc., as well as for the tank and water conduits, may have been very considerable."

Although very fine citrons are extensively grown in Corsica, the principal candying factories are not in that island, but in Leghorn. Italy enjoys a considerable advantage over Corsica in this manufacture, owing to the fact that the drawback allowed on the sugar used in the manufacturing process almost amounts to an export bounty. The manufacturer pays duty on his sugar in the ordinary way, but the amount of drawback returned is calculated on the amount of sugar estimated to have been used, and the estimate always exceeds the reality. Some years ago the Corsicans claimed a corresponding arrangement from the French Government, in order to enable them to manufacture candied citrons free of sugar duty, and thus protect the culture of the fruit by providing a regular local market for growers, who had been very much at the mercy of the Italian firms. The Government agreed to allow the Corsican manufacturers to conduct their business in bond, but so many restrictions were imposed in the supposed interests of the citron growers as to seriously affect the industry. No sooner were two important factories established and their reputation made than the protected growers adopted a very selfish policy, charging their Corsican customers prices very much in excess of those they accepted from the Italians. This, combined with the Government restrictions, has put the citron candying industry of Corsica into a very unsatisfactory position.

In England we receive most of our citrous fruit from Spain, which, with

Madeira, is the only formidable competitor Italy really has, but the exports from Italy of citrons, oranges, lemons, bergamot, and their products more than double those of Spain, and a great proportion of them goes to the United States.

Trieste is probably the greatest mart in the world for citrons. About 5,000 tons a year arrive there from various points.

Of the two chief kinds there met with one is the large fruit used for preserving and crystallising, the produce of grafted trees; the other, called the "*Citron of the law*," is the natural, unripe, and non-edible fruit of the ungrafted tree.

This latter is the special kind used by Jews in their religious ceremonies during the Feast of Tabernacles.

The fruit for this purpose must be from the ungrafted tree, unblemished, and with the calyx present and uninjured, if possible.

For centuries it has been the custom for Jews from Poland, Russia, and Europe to assemble at Trieste about August, to await the arrival of citrons.

There is always eager competition for perfect specimens of the fruit. Sometimes a single citron of superlative perfection will fetch as much as £3. They are afterwards distributed over the whole of Eastern Europe, Germany, and Poland.

Some 2,000 of these selected "*Citrons of the law*" come to England. The packing is conducted with the greatest pains and after the most careful examination. Each case contains 120 citrons, and each fruit is wrapped round with very soft tow, so as to prevent any injury to the citron or its calyx. The use of citrons from the Ionian Islands is prohibited by the *rabbis*. Considerable quantities without the calyx are exported from Bordighera in Italy, but the value placed on these is far below the citrons with calyx complete.

Madeira exports a large quantity in "pipes," containing 350 to 500 fruits each. Price, f.o.b., 40/- to 60/- a pipe.

Citronella. —This is an essential oil imported almost exclusively for soap-making, hair-oil scenting, and a few similar purposes.

It is obtained from the leaves of the *Andropogon nardus*, a bushy grass growing in Singapore, Ceylon, etc.

In Ceylon two varieties of citronella grass are cultivated, viz., "Maha pangiri" and "Lenabatu pangiri." The first has somewhat broad leaves, and the bushes formed are larger than the second, but the plant soon dies, so that the latter is more popular, although it yields less oil.

Some 70,000 cases come yearly from Ceylon alone, but it is said to be largely adulterated with kerosene, and anything less than 25 per cent. is difficult to detect.

Civit. —French for a hash of wild birds or game.

Clams. —An American term for various kinds of shell-fish of the *mussel* tribe.

"Clam" is in fact a name given in different localities to different bivalve mollusks.

Thus, in New England, about the mouth of the River Helford, it is given to the pidduck, *Pholas dactylus;* in New York and neighbouring States the *Venus mercenaria* are called "hard clams" or "round clams"; *Mya arenaria* being known as the "soft clam" or "long clam."

Clams have become of great importance as an article of food by reason of their great abundance.

A "Clam Bake" is a picnic at which the main dish is one of clams, baked in the primitive Indian fashion. The bivalves are placed in a cavity in the ground, which is first lined with hot stones. The whole is next covered with sea-weed, and the result is one of the most popular dishes in the Amercian *cuisine*.

Considerable feeling has lately been manifested on Puget Sound against the wholesale destruction of the natural clam beds by the packers at Port Angeles. It is reported that, instead of digging for them in the time-honoured manner, the beach is being ploughed up by means of a plough pulled by horses, and the

result of this method of catching will soon result in total annihilation of this toothsome bivalve.

Clam-Chowder.—A popular dish or hotch-potch (especially with fishermen) in America and Newfoundland, consisting of *clams* or sometimes other fish, cut up in small pieces, and boiled with biscuits or crackers, pork, potatoes, onions, etc., in a caldron (F. *Chaudière*).

A "chowder" party is a sea-side picnic, at which chowder is the main dish.

Claret Wines.—(See also *Bordeaux Wines.*)—An old English name given red wines of France generally, and especially to those of Bordeaux; but not to Burgundy wines.

The approximate claret vintage of a favourable year is estimated at about £40,000,000 sterling.

Clarets are divided into several classes, according to their excellence, the chief vine tracts being those of Medoc, Graves, Palus, and Blanche, each particular vineyard producing its peculiar sort of vine; that of Medoc yielding the glorious Château Margaux, Lafite, Latour, and others, such as Leoville, Larose, St. Julien, St. Estephe, Bramme Mouton, etc. The famous Haut Brion is from the vine tract of Le Graves, as also the white wine known as Vine de Grave.

The wines of the flat and fertile Palus are deep-coloured, full-bodied, rough and hard when new, but they improve much by keeping, are well adapted to long voyages, and are known as *Cargo Wines.* The Blanches, or dry wine district, give us Sauterne, Barsac, etc., besides the famous white wine *Château d'Yquem.*

The best clarets are of bright deep ruby or violet colour, exquisite bouquet, approaching the flavour of the raspberry and violet, of soft silky taste, also very refreshing and invigorating, especially in hot weather.

In France, however, the names *clairet* or *vin ordinaire* are applied to any poor, weak, and inferior wines of a light colour, irrespective of district; the red wines of Bordeaux being distinguished either as *Bordeaux*, or by the name of the particular place where the grapes are grown.

Good clarets should contain 5 to 6 per cent. of absolute alcohol; and both these and other wines of the same class should not be decanted until about to be used.

As with Burgundy, clarets seem to be increasing in favour with British consumers, but it is no less a fact that a great deal of the claret now made in France is from inferior Spanish wines.

It may not be generally known that the mode of drinking claret among Bordeaux connoisseurs is to drink from four to seven different marks of claret during dinner, beginning with the lower grades and youngest wines, and with each dish progressing upwards to the higher growths, all of the same vintage. It is considered that in this way, and by the choice of appropriate dishes, the true qualities of the wines are brought out and done justice to, and thus the delicacy, bouquet, and fine qualities of the vintage can be appreciated to the fullest extent.

Clarke's Blood Mixture.—(See also *Patent Medicines.*)—An 8 oz. bottle analysed in 1875 contained—iodide of potassium, 64 grs.; chloric ether, 4 drs.; liquor of potassa, 30 drops; water, 7½ ozs.; and coloured with burnt sugar. The chloric ether here mentioned is made by dissolving 1 part (by volume) of chloroform in 19 parts (by volume) of alcohol.

In 1893 an analysis showed 48 grs. of iodide of potassium to the 8 oz. bottle.

Clary.—(Also called *Wild Clary* or *Meadow Clary.*)—A kind of sage plant, *Salvia sclarea*, native of Southern Europe, grows about 2 feet high, with a clammy stem, large heart-shaped leaves, and pale blue flowers.

It is used for flavouring soups, etc., and in confectionery. A stimulating medical wine is also made from the flowers.

Clayed Sugars.—Those which have undergone a partial clarification, or refining from the molasses and other impurities, by filtering through a thick layer of clay.

The system is now practised chiefly in China, and the sugar so treated is exported from there to foreign countries.

Clayote or **Choco.** — A tree of Mexico and Venezuela. The fruits are edible, and occasionally sold in Covent Garden market.

Cleansing Clay.—A natural earth ground and prepared by Mr. R. J. Ll. Price, at Rhiwlas, Bala, North Wales.

Cleansing Crystals.—See *Washing Powders.*

Cleansing Powders. — PATON'S "CLEANALL" POWDER has the largest sale amongst the principal steamship companies for washing and cleansing paint work.

It is manufactured by PATON, CALVERT & Co., proprietors also of the "Matchless" Metal Polish, Leeds Street, Liverpool.

Another popular make is that of H. May & Co., Ltd., Goodinge Road, Islington, London, N.

Gardner's patent "Rapid" Sifter and Mixer is suitable for any of the above. Prices, from 50/- to £100. Catalogues from Wm. Gardner & Sons, engineers, Gloucester.

Clingstone Fruits. — Stone fruits (such as certain varieties of peaches, plums, etc.) in which the stone grows to the pulp adhering to it, and not separating on ripening. *Freestone* fruits, on the other hand, are those varieties in which the stone separates from the pulp, and often rattles about when ripe.

Clock or **Watch Oil.**—Ger. *Uhröl.* (Also called *Porpoise Oil* and *Sewing Machine Oil.*)

A very fine oil obtained from the blubber of the porpoise, and especially from the head, has long been used for the above, so also has finest sperm oil (frozen), almond oil, and the oil of the hazel nut; but the following is the best for the finest horological work:—Take the purest and lightest oil obtainable, and place it in a retort with eight times its weight of absolute alcohol. Boil it for ten minutes, decant the liquid and allow it to cool, then let it evaporate until its volume is reduced to a fifth, filter and keep it in well stoppered and sealed bottles. It also answers well for sewing machines, cycles, etc.

All natural oils contain acid and solid matter, and delicate machinery is often much injured by their use. Oil for clocks should be very pure, and can be made so in this manner:—Put a quarter of a pint of lime-water to a pint of oil in a bottle, shake it well, and let it stand for five days. Then draw the oil off for use.

Clos-Vougeot.—This highly-esteemed burgundy wine takes its name from the village near which the "*clos*" (close or field or vineyard) is situated (Côte d'Or). It formerly belonged to the nuns of Cîteaux.

A large amount of wine is sold as Clos-Vougeot, but the genuine product is very limited.

Cloth Reviver (Black). — Several preparations are sold under this and other names, such as *Shine Remover*, *Anti-Shine*, etc. They are for restoring the colour of faded black cloth, or for matching the shades of same.

One recipe is—4 oz. galls; 1 oz. each of logwood, copperas, and iron filings; and 1 quart of vinegar; mixed by heat, and, when cool, 1 oz. of ox gall is added.

Another recently patented solution consists of a mixture of turpentine, ammonia, methylated spirit, ether, and water.

Clotted Cream.—(See also *Cream.*) —The increasing fancy for this delicacy, and the regular sale that is springing up for it in all large towns, is well worth the notice of grocers and provision dealers. Farmers are paying much more attention to its production now than formerly.

It is commonly made by heating the milk after the cream has risen and allowing it to cool again before removing the thick crust thus formed. A little formalin, boracic acid, or preparation of borax are the usual preservatives, but lime and cane sugar are sometimes used. The preservative is first dissolved in a little milk, and then stirred into the cream, but the three first-named preservatives are now held to be adulterations.

There are, of course, many qualities, but Devonshire seems to bear the palm for its clotted cream. Every one who

has visited the West country, especially Ilfracombe and Devon, will be familiar with it.

The new milk is allowed to stand for some hours undisturbed in the milk bowls or tin pans; these are then placed on a hot-plate or in a copper, and very gradually raised to a temperature of about 180° to 190° F., or until it begins to simmer.

Without disturbance the pans are replaced in the dairy, when the cream gradually thickens, and after about twenty-four hours is skimmed off. It is often sold by weight at same price as butter, and Devonians claim the superiority of their production to be due to the peculiar richness of the milk in the cream district. The cream which rises to the surface is sometimes so thick that it is declared it will hold a flat pound weight on the top without breaking through. It is prepared in much the same way in Cornwall.

Clotted cream contains not only the fatty matters of the milk, but also some of the albuminoids in a coagulated condition; and the delicate flavour seems to be best developed by allowing the cream to rise and ferment by the normal process.

Separators are objected to, as producing weak cream and of inferior flavour.

Town-made clotted creams are usually made from milk that has been jolted about all day along the streets, and finally scalded at night, "to save its life."

Cloudberries.—(See also *Dewberries, Bilberries, Cranberries, Brambles, Mulberries,* etc.)—This northern berry, identified by botanists as *Rubus Chamæmorus*, is very scarce in England; but in the sub-Arctic and Arctic swamps, is very plentiful, and is considered an exquisitely flavoured fruit. It is allowed to surpass Bilberries, Cranberries, and other varieties of wild fruit of this order.

Cloudberries and cream form the last course in every Norwegian sportman's evening meal, and they usually greet him in the early morning with his coffee.

Clove Bark.—(Also known as *Culilawan Bark, Clove Cassia,* or *Clove Cinnamon.*)—It is the bark of the *Cinnamomum culilawan*, a tree of the same genus as the cinnamon tree.

It possesses an aromatic odour like that of nutmegs or cloves, and is often mixed with ordinary cinnamon or cassia bark.

Clove Cordial.—Sold largely in London public-houses. A liqueur of weak spirit flavoured with cloves, sweetened, and coloured with burnt sugar.

Cloves or Clove Buds.—Da. *Nelliker;* Du. *Kruydnagelen* (nail spice); F. *Clous de Girofles;* Ger. *Naglein, Gewürznelken;* It. *Garofani;* Pol. *Gozdrik;* Port. *Cravos;* Rus. *Gwosdika;* Sp. *Clavos;* W. *Ffrwth o'r India.*

Cloves are the dried, unopened, or unexpanded flower buds of the clove tree or evergreen shrub, *Caryophyllus aromaticus*, formerly classed as *Eugenia Caryophylata*, a kind of myrtle, native of the Molucca Islands, but now cultivated in Zanzibar, Penang, West Indies, and other tropical countries, especially Africa, although the Dutch at one time made every effort to limit the production to Amboyna and certain other of the Moluccas, by extirpating the plant elsewhere.

The trees grow 20 to 40 feet high, every portion of which is aromatic. They are very slender and graceful in appearance, commencing to bear in their fifteenth year, and continuing until seventy or eighty. In form it resembles the laurel and sometimes the beech, trunk straight, and rises 4 or 5 feet before it throws out branches. The bark is smooth and thin, and adheres closely to the wood, which is an ugly grey colour and of little use.

The trees are very petted, and do not thrive well near the sea, where they suffer from the spray, nor in the higher mountains, where they suffer from the cold.

There are about half-a-dozen varieties of cloves, viz.:—

(1) The ordinary cultivated clove.

(2) The "female" clove, which has a pale stem.

(3) The "Keri" or "loory" clove.

(4) The Royal clove, which is very scarce; and the Wild cloves of very little flavour or value.

The three first are equally valuable as spices, but the female clove is best for distilling of essential oil.

The dried clove itself is of reddish brown colour, rather over half an inch long, and consists of a dark brown wrinkled calyx tube, surmounted by four teeth which grasp a little ball or knob, thus giving the clove a nail-like appearance; hence its French appellation "*clou*" (nail), and Spanish "*clavos*."

These flower-buds grow in bunches on terminal flower-stalks, very like the flower-buds of the lilac tree. While green, or the stem just turning a pinkish yellow, the buds are, more or less, carefully picked by hand, and then dried a week or so in the shade or cured by hanging them on hurdles by the smoke of slow wood fires—losing about half their weight in the drying process. They are usually finished off in the sun, which gives them a darker colour. In some places they are scalded in hot water, but this is not common. The quicker they are dried the less is the waste of aroma. A properly dried clove is of a light brown or tan colour.

If not picked in time the stem turns red, and the little balls or knobs become unfolded, and burst out into flower during the drying process, and the cloves then become almost valueless as a spice, and are then called *mother cloves;* or, if picked too young and green, the dried cloves will be shrivelled.

Good cloves have a strong aromatic smell and a hot spicy taste; they contain about 20 per cent. of volatile oil, 6 of resin, 13 of gum, 13 of tannin, etc., 28 of woody fibre, and 18 of moisture. They should be uniform in colour, and leave an oily impression on the fingers when handled.

When newly gathered a great portion of the oil is sometimes extracted, and this leaves the cloves pale, thin, and shrivelled in appearance, although they may be afterwards freshened or brightened up a little by rubbing with oil, or passed off by mixing with good cloves. Cloves which have been tampered with in this way will be noticed to have a large proportion of their knobs or heads knocked off.

Another cause of headless cloves is, as already shown, they may have been too far advanced when gathered, that the knobs burst into flower during the drying process; for the clove buds on a bunch are never all ready at the same time. The bunches *should be* gone over very carefully to gather those buds which are fit, but in Zanzibar and Pemba, Arab labourers and Indian coolies being scarce at that busy season, the gathering is usually done hurriedly and roughly.

Cloves are also liable to be adulterated with an excess of stems, sticks, or stalks, which contain very little virtue.

The colour generally desired in cloves is red, and buds of this colour ("red heads") are usually more valued than the black. *Amboyna cloves*, however, which are small and dark brown, are still considered to be the best, and are also distinguished by the title of "Royal cloves," but they are very scarce.

Penang cloves, from the Straits Settlements, have a high reputation, and command a higher price than either Amboyna (Moluccas) or Zanzibar cloves. They are large, plump, and of bright colour. They are picked by boys and girls, and spread on large sieves or mats of loose texture, and merely dried under the shade of trees or in sheds with palm-leaf-covered roofs till ready for market. A strong objection prevails against the *direct* sun-drying process, because it not only shrivels and blackens the buds, but also extracts or evapporates much of their strength.

Zanzibar and *Pemba cloves*, usually dried in the sun on mats are smaller than Amboyna, with the buds or knobs frequently broken, also often mixed with stalk and foreign matter.

About four-fifths of the crop of the whole world is now grown in East Africa, and cultivated chiefly by slave labour. Zanzibar is the great centre of the trade, which, indeed, forms the staple item upon which Zanzibar and Pemba depend.

The production of these two islands averages about 20 million pounds a year, about one-fourth of which are grown in Zanzibar and three-fourths in Pemba.

A ten-year old tree yields about 20lbs. in the year, and a tree of twenty years about 100lbs.

The difference between Zanzibar growths and those of Pemba is very marked. Zanzibar cloves are always of a bright reddish colour, generally very dry, and can be stored a long time; but those of Pemba—small and dark in colour—mostly arrive damp, and are disposed of quickly, as they lose weight if kept; but both kinds, however, often come mixed together.

The proper season for picking, drying, and marketing these cloves extends from September to March, although they continue to be brought into town for some months later, either because some of the trees are retarded in their flowering or because the growers are holding back for a more favourable market.

They only realise on the spot about 10/- per frasila or frazilleh (a Zanzibar weight of 35lbs.). The natives are also apt to adulterate the cloves with salt, but if discovered such goods are now seized and burnt on the spot.

The best cloves are usually imported in chests, and the cheaper in double mat bags or bales of 140lbs., in which latter they will absorb about 8 per cent. more atmospheric moisture in Europe than in Zanzibar. They should average about 4,300 to the lb.

Where quantities are dealt in, it is too often the practice of dishonest merchants to place buckets of water near, so as to increase the weight of the cloves by letting them absorb moisture.

The clove tree was first introduced into Mauritius in 1770 by the French, and at the end of the century an Arab, named Harameli-bin-Saleh, accompanied a French officer from Zanzibar to Bourbon, and obtained permission to take back a small quantity of seeds and plants with him.

This was the commencement of clove cultivation in Zanzibar, Harameli making the first plantations or "shambas" at Mitoni, on the road to Chueni. The different methods by which this cultivation is now carried on are evidently copied from the French; and the Swahili word for clove, *garafu*, is probably a corruption of the French word *giroflier* (clove tree).

The world's annual consumption is about 80,000 bales, and the crops now often exceed that, so prices have become very low. The price which Zanzibar cloves realise is never so high as that for Amboyna and Penang varieties. The latter, being gathered and treated more carefully, are found richer in oil and finer in flavour, although dried by fire.

Clove Stems.—These contain a little oil, and large exports are made from Zanzibar, especially to Bombay and New York.

Cloves, Essence of.—A flavouring for culinary purposes, usually prepared from oil of cloves—say one part of clove oil mixed with eight or twelve parts of rectified spirit. Sometimes one part of magnesia is added.

Cloves, Oil of.—This rich volatile oil is distilled with water from the young unopened flower-buds of the clove tree, or rather the little ball which is seen at the end of the clove, although the oil pervades more or less every part of the tree. The oil, when new, is almost colourless, with a faint yellow tinge, and the strong smell and burning taste of cloves. When old it turns to a reddish brown colour. Its chief value depends on the quantity of *eugenol* it contains.

London is the chief centre for clove oil, but large quantities are made in Amsterdam and Rotterdam.

It is the least volatile of all essential oils, and sinks in water. Often used as a remedy for griping pains and toothache—dose, 1 to 5 drops. It is also used for flavouring liqueurs, confectionery, etc., and for scenting soaps, etc.

Coals.—F. *Charbon;* G. *Kohlen;* Port. *Carbao;* Sp. *Carbon.*

The production of coal in the United Kingdom is greater than that of the rest of Europe combined. Coal consists of carbonised vegetable matter impregnated

in various degrees with the pitchy and resinous substances so characteristic of the fir family.

Peat bogs in superficial beds present, perhaps, the first stage in the change (see *Peat Moss*, etc.), and then the lignite or brown coals of the Tertiary age.

True coal is very compact, has for the most part lost its woody and fibrous character, and contains but a very small quantity of earthy matter.

It consists of two principal varieties, the bituminous and the anthracitic.

Bituminous coals contain an abundance of gas, tar, paraffin, and such like substances, and therefore burn with a brilliant flame.

Anthracite coal is very hard and glossy, not soiling the fingers. It is almost pure carbon, and its vegetable structure is still traceable under the microscope, and it contains very little gaseous matter, therefore burns with very little or no flame, but gives intense heat, and when used in blast furnaces is very effective in iron manufacture, etc.

Cannel or *Parrot coal* is a compact, jet-like variety of bituminous coal and the richest in volatile constituent. In Scotland it is called "Parrot."

Steam coal, so called because of its suitability for vessels taking long voyages, is a semi-bituminous kind, burning with less brilliancy and rapidity but affording great heat.

Bovey coal.—A local name for the lignite, raised near Bovey, or Bovey Tacey, in Devonshire.

Blind coal, or *Smudge coal*, is coal partially deprived of its bitumen, and converted into a sort of natural coke, by the contact of heated masses, such as trap-dykes, etc.

Splint coal is a Scotch term for a variety forming hard laminæ, which, on fracture, split into flaggy layers.

Coal Oil.—See *Naphtha*.

Coal Tar or **Gas Tar.**—See *Tar*.

Coal Tar Soap.—Is generally made by beating together 2 parts of soap shavings, 2 parts of liquor of potassia, and 1 part of tar; or it may be also made by melting together, say, 20lbs. cocoanut oil and 3lbs. of coal-tar, saponifying the mass with 11lbs. of caustic lye of 11° B.

Another is made from 20lbs. cocoanut oil, 10lbs. tallow, 5lbs. juniper tar, and 15lbs. of soda lye of 40° B.

It is considered an excellent disinfectant, also good for eruptions of the skin.

Cobalt Blue.—Da., Du., and Rus. *Kabalt*; F. *Cobalt*; G. *Kobalt*; It., Port., and Sp. *Cobalto*; Sw. *Kobolt*.

A pure colour of high luminosity obtained by grinding very fine a deep blue glass called smalt, which is an oxide of the metallic ore known as cobalt, found in Saxony and Sweden. That from Saxony is the best.

The word Cobalt had a superstitious origin. The German miners used to give the name "Kobold" to a demon who was supposed to inhabit the mines, and, as the ores of cobalt gave them a lot of trouble, they attributed it to the evil doings of the demon, and called the metal after him Kobold, or Cobalt.

Cob-nuts, Kentish Cobs, etc.—A highly esteemed type of the common hazel nut. They are grown rather extensively in Kent, especially about Maidstone, and in other parts of England.

The Kentish cobs are very large, and, the tree being a hardy subject, it is easily propagated, either by suckers, layers, or by budding and grafting. It is not particular as to soil, so that many steep banks and stony patches of land that will not grow better fruits are planted with nut trees, 12 to 15 feet apart, and frequently other vegetable crops or bush fruits are grown between them till the nut trees require all the ground. They are grown about 6 feet high, and pruned so as to form so many inverted umbrellas.

The nuts are almost round in form, hard-shelled, and the leafy laciniated cup, or husk, which holds the nut is smaller, more open and less jagged at its extremity than is the case with other varieties of hazel-nuts. The kind which has red-coloured pelicles round the kernels is considered the best. In Kent they are gathered as soon as the husks and nuts turn brown, and when quite

dry. They are best gathered before they drop out of the husks, although they are often shaken off the trees and then picked up. A good plantation will yield about half a ton to the acre, and in prolific years two tons have been gained. They are afterwards spread out thinly in a fairly dry place, but not so dry as to shrivel up the kernels. Fresh air should be freely admitted so as to prevent mould attacking them.

Prices vary from 25/- to 60/- per 100lbs. Considerable quantities of cob-nuts are also imported from the South of Italy, especially Messina. (See also *Hazel-nuts*, *Filberts*, *Barcelona Nuts*, etc.)

Coca or **Cuca Leaves.** — These leaves are in no way related to *Cocoa nucifera*, the large milky nuts sold by fruiterers, nor to *Cacao theobroma*, the beans from which drinking cocoas and chocolates are manufactured, nor are they in any way connected with the Coco-root plant, *Caladium esculentum;* but are from the bush or vine known, botanically, as *Erythroxylon coca*, growing 2 to 8 feet high, with straight branches and brilliant green leaves, in most of the northern parts of South America, in the valleys of the Eastern slope of the Andes, also in Ceylon, and chiefly in Bolivia and Peru. The old Peruvian name for the fruit is *Cuca*, but the more modern Spanish word is *Coca*.

The main plantations are in the Otuzco, Huamachuco, and Cajabamba provinces. The plant closely resembles the blackthorn, and grows in dry soil generally at about 2,500 feet above sea-level, as a common weed in India. There are nearly a hundred species of the leaf, of more or less medical value; but the two principal are Peruvian or Truxillo, and the Bolivian or Huanuco, of bright, leathery appearance, and with a ridge-like mid-rib.

The best leaves are provided with a minute horny apiculus, which, however, in many samples, is broken off.

A third species, known as *Novo-granatence*, with narrower leaves of pale green colour, said to be very carefully dried, is exported from Java to Holland and Germany. Peru exports more than any other country. The Peruvian leaves are somewhat small, thin, and brittle, of a clear light green colour on both sides, but are not so highly esteemed as the Bolivian, which are usually about three times the size and quite shiny.

Although the richest leaves grow in dry soils, those grown above 4,000 feet are very inferior, both in strength and aroma, as also are those larger plants often grown 10 feet high on the moister soil of Chuquillanqui River. The plants are cultivated entirely for the sake of their leaves, which, when fresh, have remarkably stimulating properties. Like tea, coffee, kola, and maté, coca appears to be a powerful stimulant, its active principles being cocaine, *hygrine*, etc.; while its narcotic properties exceed those of opium, tobacco, or any other plant.

The younger leaves contain twice as much cocaine as the older leaves, and usually possess a pale brownish-green tint with a tea-like odour. Coca leaves are somewhat similar in appearance to those of the myrtle and to tea-leaves, but they never have the dentated margin, and on the under side may be noticed the prominent curved line on each side of the mid-rib, which easily distinguishes them from other leaves.

Coca is chewed by the natives in a similar manner as tobacco in England, opium in Turkey, betel in India, or the kola-nut in Africa, and produces an undeniably sustaining power, a sense of warmth in the mouth, with a pleasant pungent taste.

The fresh leaves are generally chewed with a little powdered unslaked lime, and in Peru the coca chewer takes his three or four portions a day. A sort of tea is also made from the leaves, and cases of intoxication from its use are not uncommon; but they do not anywhere appear to be generally employed in the form of tea or ordinary beverages. (See *Coca Wine*, etc.)

There is a factory in Callao and two in Lima where it is made into *Cocaine;* but the principal depôts are at Huanuco, Ayacucho, and Cuzco in the interior. The leaves are also prepared in small

balls, called "Acuclicos," ready for mastication.

Although it is only since 1874, when it was first brought into prominent notice in England, that our scientific men have interested themselves in its medicinal properties, the coca plant has been known ever since the conquest of Peru, and there is no doubt of its efficacy in temporarily soothing the nerves, driving away sleepiness, and greatly preventing the short-windedness and fatigue often felt in forced marches, running, climbing staircases, etc., hence it may be of considerable value to athletes and others.

Experiments by Lombard show that coca, coffee, tea, guarana, and maté, all have considerable influence in increasing the power of the organism to resist muscular fatigue. Coca takes first rank, and especially stimulates the muscular energy, maintains its action for a longer period, and its use is not followed so soon by either nervous or muscular exhaustion. The others rank in the order named. Infusions of coffee, tea, and maté possess a tonic rather than a stimulant action on muscular energy, and this tonic effect of coffee is apparent for about an hour after its ingestion; while the effect of tea, maté, and guarana lasts for half-an-hour only. Not only does coca impart vigour to the muscles and intellect, but a temporary feeling of exhilaration to the whole system. It has also been found an excellent specific for asthma, and for the cravings of the victims of opium and morphine, but, unfortunately, similar effects result from its abuse or continual use—weakness and nervous exhaustion.

The leaves should be dried as quickly as possible in the shade (not in the open sun), and used as early as practicable afterwards. It is, in fact, very doubtful whether the old dried leaves conserve the goodness of the fresh green leaves or any virtue at all, especially if they have fermented through being packed insufficiently dried.

The prices of coca leaves in the London market vary from 3d. to 6d. per lb.

Coca Wine.—The sustaining and powerful properties of *Erythroxylon Coca* has been so much written about that we now have it in various forms. American and Paris druggists send it as coca tea, lozenges, liqueur, extracts, pastilles, and wine. The latter is now commonly a solution of the alkaloid cocaine, in a sweet and usually strongly alcoholic wine.

It is also prepared by mixing the fluid extract of coca leaves with wine, say, 3 parts of extract with 24 parts of Malaga wine. When thus mixed it may be allowed to stand 12 hours, then poured off, and filtered bright through pumice-stone. Uniformity of strength is not so easily ensured.

Some coca wines only contain about 0·01 per cent. of cocaine. If the wine contain too much, it tastes very nauseous, and a wineglassful of it produces a very unpleasant sensation in the mouth and throat.

A considerable quantity of coca wine was recently ordered by General Duchesne for the use of the French troops proceeding to Madagascar, although the use of it to relieve nerve fatigue is attended with considerable danger, and is likely to lead to a pernicious abuse of the drug with disastrous results. Indeed, the continued use of cocaine is very injurious. It is even stronger and worse than *Calisaya*, and persons who once give way to either can seldom give them up. The possibility of risk is intensified by the varying strengths of the coca wines on the market, some containing as much as half a grain to the ounce and others as little as one-hundredth of a grain.

Two liquid extracts of coca are usually sold by druggists. One prepared by maceration and percolation of the powdered leaf with proof spirit, but in this so much chlorophyll is carried into solution that when mixed in water or wine of low alcoholic strength it turns the mixture turbid and unsightly, so that the public do not care for it. The other miscible preparation is more elegant. It is prepared by repercolation with a mixture of one part of rectified spirit with 2½ or 3 parts of water and with

or without an addition of glycerine. This forms a quite clear mixture with, say, orange or ginger wine.

Coca Wines, professedly consisting of the coca alkaloid and wine, for use as medicines, and, unless sold by licensed holders, are required by the Excise to contain half a grain at least of the alkaloid in each fluid ounce, so as to ensure their being unpalatable and unsaleable as beverages.

Cocaine. — A poisonous vegetable alkaloid (*Cocaine hydrochlor*), discovered in 1859, and obtained from *Coca* leaves. Solutions of it can only be sold by legally qualified chemists, and every sale must be entered in the poison register.

In this country cocaine is generally prepared by purifying the crude cocaine manufactured in Lima. The Bolivian pale brown leathery leaves yield the best quality, and the leaves of the young plant yield over double the quantity of alkaloid found in the older shrubs.

Java leaves go mostly to Germany, and yield but little cocaine.

The province of Otuzco, in Northern Peru, is the most important district of coca cultivation. It produces over 200 tons of the leaf yearly. The crop is received from the haciendas by two houses in Truxillo, which dispose of it to the cocaine manufacturers in Lima.

About 2,000 kilos of crude cocaine are exported yearly from Callao.

Cochineal. —Da. *Conchenilje;* Du. *Konzenilje;* F. *Cochenille;* Ger. *Koschenille;* It. *Cocciniglia;* Per. *Kernij;* Port. *Cochenilha;* Rus. *Koshenille, Koussenel;* Sp. *Cochinilla;* Sw. *Kochenil;* W. *Lliw coch.*

A colouring extract or beautiful red dye for scarlet and crimson, prepared from the scale insects known as *Coccus cacti*, which belong to the *Hemiptera* or half-winged order, and, although native of Mexico, have been cultivated or propagated over fifty years in the Canary Islands, in what are called "nopaleries," and exported to all parts of the world. Some come from Teneriffe and Algeria. Inferior and wild kinds also come from Mexico, Honduras, and Guatemala, which produce only a ruby colour; but in the Canary Islands the commercial importance of the cochineal industry is only second to that of the vine. They thrive best on the "nopal" or *Cactus opuntia* (Indian fig-tree).

There are three varieties, viz., black grain (*Grana fina*), gathered in March, and used for carmine; silver grain (*Grana sylvestra*), very rich in the waxy coating so characteristic of the grey cochineal. The "rosy-black grain" is made up of either of the others, when killed by a wet process, whereby the waxy coating is melted, and varnishes the body of the insect. The two former kinds are killed by suffocation with either charcoal or sulphur in the sun.

The insect itself is about the size of a pea—about 70,000 go to the pound; but the females, which are wingless, are much larger than the males, and by far the most numerous. The body is almost shapeless, sometimes oval and sometimes globular. It has a silvery grey appearance, the body being of a reddish black or mulberry colour, covered with fine white dust; and it is remarkable the insect itself for several centuries used to be considered a kind of vegetable grain or seed, hence their name of "grain."

The legs are very imperfectly developed, and make them look like shrivelled berries.

Locomotion is impossible to them, and they live motionless, sucking the juice out of the cactus leaves, by means of a pointed beak with which they are provided.

They are gathered three or four times a year, as soon as the females have finished laying their eggs, being scraped from the plants on which they feed by a blunt knife, filled into bags, and are then dipped in boiling water to kill them; after which they are dried in the sun and exported—the white coloured and heavier in bags of about 200 lbs. weight, the black and the grey (which are lighter) in bags of 140 to 160 lbs.

The introduction of the aniline dyes—especially the sudden impulse given to them in 1879—has reduced the value of cochineal very considerably; still it is

said to be the only red dye which satisfactorily resists hard wear and heavy rains.

The dye is obtained by first fixing the colouring matter of the insect by a mordant of alumina and ovide of tin, and then exalting the colour by the action of super-tartrate of potash.

Black cochineal is often heavily loaded with the black sand from the cochineal fields, but is easily detected by means of a magnet.

The best cochineal are the large, plump, and dry *nopal*, or coccus cacti, with a silver white colour on the surface. The cochineal of the fig trees of the East Indies, which is collected twice a year, produces carmine lake; and the cochineal of Poland, which grows upon the root of *Sceleranthus perennis*, gives a good colour. This kind used to be the object of an important trade before the importation of the Canary cochineal, and is still used in Poland and Russia for dyeing morocco, cloth, silk, and hair; but the only sorts now met with in our markets are those from the Canaries, the Mexican from Vera Cruz, and the East Indian from Java, which are inferior, and mostly come in reddish grains, packed in tin boxes of about 1 cwt. each.

Apply to Charles Cocks & Co., Reading.

Cochineal Liquid or Carminic Acid.—Liquid cochineal for culinary purposes, such as jellies and confectionery, is usually prepared by boiling, say, one part of cochineal and one part of salt of tartar in eight parts of water, adding one part each of alum and cream of tartar. When dissolved, strain and bottle.

Or take 1 oz. silver grain cochineal, 1 oz. subcarbonate of potash, 1 oz. potash alum, ½ oz. citric acid, 4 ozs. sugar, and sufficient water. Then bruise and boil the cochineal in a glass or copper vessel of suitable capacity, in 8 oz. of water, to which the subcarb. potash has been added. Mix loosely the alum and citric acid in powder, and add gradually to the boiling liquid, and continue to boil until effervescence has entirely ceased.

While still hot, filter on to the sugar, and wash the filter with hot water sufficient to make the whole measure 12 ozs.

Cockie-Leekie.—A popular Scotch soup composed of fowls—properly, *old roosters*—boiled with *leeks*, and seasoned with pepper and salt. Most used in winter season.

Cockles.—Da. *Musling;* Du. *Kammossel;* F. *Coques;* G. *Musseln;* It. *Bonchiglia;* Pol. *Bribigao;* Rus. *Ghrebeonka;* Port. and Sp. *Almejas;* Sw. *Mussla;* W. *Cocus, Gwichiaid.* (See also *Mussels, Whelks, etc.*)

These small shellfish (*Cardiumedule*) are usually sold by measure; a peck of cockles contains about 1,000.

They are sold either raw or cooked, and their consumption is chiefly confined to the poor.

Usually cooked in their own liquor, or in salt water, and vinegar added, and eaten as "hot cockles."

Cockroach Poison. — See *Beetle Powders.*

Cocks' Combs.—Dressed and preserved, and usually put up in bottles. These are the fleshy crests or caruncles growing in several forms on the heads of domestic fowls, and particularly developed in the male birds.

The wattles of the hen are also dressed and used in the same way.

Cocks' Kidneys.—See *Rognons de Coq.*

Coco.—A French or Turkish name for a popular drink sold in the Paris streets, and made by macerating liquorice and a little coriander-seed in water. A kind of coco is also sold in the form of a paste, packed in tin boxes. This variety is described as a mixture of extract of liquorice with Vichy salts, to which essential oils of lemon, orange, anise, and peppermint, as well as absinthe and oil of cherry-kernels have been added. The compound is easily soluble in water, to which it imparts a red-brown colour. The presence of the carbonate (Vichy salts) causes an alkaline reaction, which assists the solution of the glycyrrhizin. In this form coco is recom-

mended as a cheap, agreeable, and thirst-quenching beverage.

Cocoa, Raw.—Da., Rus., and Sw. *Kakao;* F., Ger., Port., and Sp. *Cacao.*

The different products passing under this and similar names are referred to under *Coca* and *Cocos*, and it is proposed here to treat of the leading varieties of the raw cocoa from which chocolates and drinking cocoas are manufactured.

Many authorities insist that this product should be called *cacao*, and not *cocoa;* but the latter name has now been generally adopted, and so long used, that in every town throughout England cocoa and cocoa-rooms are household words, and will doubtless remain so.

There are people, however, and even some grocers, who have the idea that chocolates and drinking cocoas are, in some way, made from the large milky cocoa, or *coker* nuts sold by the fruiterers. Such, of course, is not the case. The nuts or beans furnishing these popular sweetmeats and beverages are the berries or seeds of the *Theobroma cacao*, from the Greek words *Theos* (god) and *Broma* (food), or "food of the Gods," a title conferred upon the product by Linnæus. The tree is a tropical evergreen of stunted growth. It is somewhat angular without any main stem, but usually sends up five or six stalks from the ground, which grow 12 to 30 feet high. It is a native of either Central America or the West Indies, but is now cultivated in most of the tropical countries, especially in Ecuador, Venezuela, and the West Indies; by the English in Trinidad, Grenada, and Ceylon, the French in Martinique and Guadaloupe, the Spanish in Cuba and the Philippines, and the Dutch in East Indies, Java, etc.

As with orange trees, there are at least a dozen species of the cocoa or chocolate tree, and the produce varies almost as much in quality and taste. The cocoa trees are in appearance, however, all very much alike; the wood is white, vitreous, and light; the spreading branches are topped by drooping dark-green leaves, alternately oval and pointed, and from 8 to 18 inches long by 3 wide.

The blossom bursts forth in clusters direct from the main branches and trunk of the tree, and not from the smaller ends of the branches. Each flower is comparatively small, and consists of five yellowish white petals on a rose-coloured calyx. This is succeeded by a "mazorca," "cabosse," or fruit pod, which, when fully grown, may be 7 to 10 inches long and 3 to 4 broad, resembling a melon in shape, only a little more pointed. The trees require pruning much as vines do, the undergrowth must be kept down, and all outward suckers trimmed, so that the whole strength may be preserved for the formation of pods.

The cocoa tree also, like that of the orange, bears flowers and fruit all the year round; a tree in its prime produces 50 to 100 pods a year. The colour of the pods varies, according to the season, from bright yellow to red and purple. The branches are not grown low, so that in looking along a plantation the vista has been likened to a miniature forest hung with thousands of golden lamps—anything more lovely can scarcely be imagined.

The two main harvestings are about the end of May and the end of October, when the riper pods are gathered, and afterwards chopped open. Each pod is found to contain 20 to 30 beans or seeds, arranged in five regular rows round a common centre, and embedded in a pinky white-coloured spongy substance like that of the melon.

Some growths of cocoa are very strong flavoured, others are remarkably mild flavoured. They have been classified as follows, and named according to their degree of strength or mildness of flavour.

Strong Flavoured.	Mild Flavoured.
Africans	Ceylon
Surinams	Java
Cayenne	Puerto Cabello
Demerara	Caracas
Bahias	Fine Summer Arriba (Guayaquil)
St. Thomé	Colombian & Cauca
Trinidads	Carupano
Grenadas	

Strong Flavoured.	Mild Flavoured.
St. Vincent	Guiria
St. Lucia	Peruvian
Tobago	Mauritius
Dominica	Seychelles
St. Domingo { Jeremie	Madagascar
St. Domingo { Samana	Tumaco
St. Domingo { Sanchez	Esmeraldas
Cuba	Madras
Para	Neilgherri
	Jamaica

These beans, nuts, seeds, or berries—they get all these names—somewhat resemble almonds, and (when separated from the pod) are conveyed to the "sweating house," where in boxes or barrels they are submitted to a process of fermentation for four to ten days. This softens the bitterness, clears them from all impurities adhering to them, prevents sprouting, and gives them when cured that rich mahogany tint and consistence so much sought after by our best cocoa manufacturers. While fermenting they are regularly stirred every morning, and carbonic acid with a strong vinous liquid is given out. The fermentation ceases the moment the beans shed the pulp by which they are covered.

This fermenting or sweating is a very important process, because on its success depends the after value of the cocoa in the European markets. It disperses the rather unpleasant bitter and oily taste natural to the raw bean, and develops an aromatic flavour and smell. In Mexico and elsewhere the same object is attained by burying the beans in pits in the earth, but this system is not considered so good as the first-named.

After fermentation the beans are finally sun-dried and rubbed by hand; but while being exposed to the sun, and turned over with a paddle in the open air, they must be carefully watched, and run under cover in case of too much sun or of sudden rains and dews. If neglected, excess of heat parches and shrivels them; or if wet they will take an ashy colour, have a disagreeable taste, and thus lose half their commercial value.

When perfectly dried they emit a cracking sound, and if well cured the outer skin is hard and crisp, separating easily from the inner bean. The latter should be firm and bright, breaking easily on pressure into the familiar form of cocoa (or cacao) nibs. The dried beans, when stored in quantity, should be kept away from spices or other strong smelling goods, in perfectly dry and well-ventilated rooms, and require to be turned over frequently, or they will rot.

They are usually shipped to Europe in bags or skins of about 1 cwt. each, and it is in this form that the raw article reaches the English cocoa and chocolate manufactories.

One man can take care of a thousand trees, his chief trouble being the sudden changes in the weather—a heavy shower of rain will often cause many of the pods to fall off the trees. The ravages of animals (monkeys, deer, and parrots) also require constant vigilance. In the Seychelles, the cocoa harvest has more than once proved a failure on account of the rats eating through the fruit to get at the seeds as soon as it ripened.

As already stated, the cocoa tree is cultivated in most of the hotter climates, but the Ceylon product now brings the highest prices. It has risen in favour very much these last 20 years, and possesses the most delicate flavour, aroma, and colour. The best has surpassed even the celebrated Trinidad and Caracas growths. In 1878 Ceylon exported only about half a ton of cocoa, but now (1900) she exports over 2,000 tons a year. The plant, however, requires rich sheltered land, and there is only a limited area in Ceylon where it can be successfully grown.

Trinidad cocoa still ranks very high in price and quality. In that island the cultivated cocoas form the second great staple, and are divided into two classes, *Cacao Criollo* (yellow cocoa) and *Cacao forastero* (purple or foreign). There are some 97,000 acres of land devoted to cocoa growing, and the annual crop is from 20 to 25 million pounds. This cultivation has been established from the earliest days of the colony. Forty years ago there were only 7,000 acres planted with cocoa. There still remain over 700,000 acres of land in possession of the Crown, nearly 300,000 of which consists

of some of the finest virgin soil of the island. To young men with capital, steadiness, and, above all, perseverance, who may be looking for some profitable means of investing capital, we unhesitatingly say, "Try Trinidad." The town of Arima may be considered the centre. The trees require shading from the burning sun, and this is managed by planting two species of *Erythrina* among the cocoa trees.

The young cocoa plant has no insect pests, but has two deadly enemies, the foremost being a grub larva of the beetle *Stirostoma depressum*, which eats its way in a corkscrew fashion under the bark, and eventually destroys the tree. The second is a bird which provides for its coming needs by making the cacao pod its future larder. It picks a hole in the pod, and soon after follows a family of the above grubs, when, as soon as these are established, the bird descends, and devours its meal, but the pod is spoilt.

Two estates, Soconusco and San Antonio, in the Santa Cruz valley yield very superior qualities—the raw nuts in the London markets generally realising the highest prices, while ordinary growths from several other countries only fetch about half these prices.

Caracas Cocoa, from the Federal district of that name, at the North of Venezuela, also occupies a high position, but from some cause or other its value has been declining these last dozen years. (See separate account.)

Grenada and Bahia also furnish excellent sorts, commanding high figures. In the island of Grenada cocoa has become the main export.

Several good sorts, including one of the most marketable, belong to British Honduras, but the export only amounts to about £60,000 a year.

The other cocoa producing centres are Southern Mexico, most of the States of Central America, Peru, Dutch Guiana, West Indies, East Indies, and the Philippines. Considerable quantities are also grown in Madagascar, Mauritius, and Reunion. The cocoa tree is also now being successfully cultivated in the German Cameroons.

In Central America there is a purely white-seeded species, called *Cacao meco*, or *Cacao mono* (monkey cocoa), producing large pods and splendid beans, which require only 48 hours' fermentation, instead of four to ten days as with other sorts. Another variety, *Theobroma bicolor*, known in Nicaragua as "Alligator cacao," is peculiar from the soft covering of its pod, and the *raised* instead of *indented* sectional ribs.

In Ecuador, whence come the noted Guayaquil growths, the cultivation of cocoa is rapidly increasing, especially in the low-lying districts near the rivers.

The export already exceeds 15,000 tons a year, and comprises some 11,000 tons Arriba, 2,000 tons Machala, and 2,500 tons Balao.

The *Arriba* is grown on the Guayas River and its tributaries above Guayaquil. This is the best grade, and represents about 65 per cent. of the whole crop, the main season for which extends from January to July.

The *Balao*, or second grade, is grown below Guayaquil, in a district adjacent to Port Balao, and equals about 10 per cent. of the whole crop. Season, July to December.

The *Machala*, or third grade, is grown still further south, near the port of that name, and equals about 15 per cent. of the whole crop. Season, also July to December.

There are also "gleanings" gathered and marketed outside the above seasons, and these are called Rebuzcos.

The cocoa district embraces a radius of about 80 miles, with the city of Guayaquil as its base, and now yields about 34 million pounds of cocoa yearly.

Caraquez is another grade, grown in the province of the port Bahia de Caraquez, on the coast north of Guayaquil; and another very superior class, but insignificant in quantity, is grown near the port of Esmeraldas, on the coast north of Bahia de Caraquez.

Of all cocoas Guayaquils give the most trouble to distinguish one quality from another. This difference in the quality is due to the locality of the estate and the season of the year at which the cocoa

is picked; and as localities run one into the other and seasons vary, so do the qualities of the produce, some Caraquez Guayaquil being very difficult to distinguish from some Arribas.

The system of planting preferred there is from seed, and not from shoots or cuttings as is done elsewhere. The cocoa bean is taken fresh from the pod with the pulp, and set at 9 feet distance between each plant, preferably under the shade of a plantain, until the plants are well grown. The enormous number of birds from the surrounding tropical forests are the chief trouble, often causing great havoc to the cocoa crops.

The best way of curing is by a moderate fermentation. Some is washed and partly fermented, but this washing and drying process seems to leave a moisture, which is afterwards thrown out on the surface of the shell, giving it a grey and mouldy appearance. Cocoa fully, but not over, fermented has a bright red colour, and the best samples have a bloom like the bloom of plums on them, which has dried on the shell. It probably arises from a secondary fermentation and the richness of pulp.

The most valuable constituents of cocoa are, of course, theobromine and caffeine, for it really possesses both these alkaloids. Professor Emmenger, a noted German chemist, lately published in the *Apotheker Zeitung* special analyses of the leading growths of cocoa, showing the percentages of theobromine and caffeine found in each:—

	Theobromine	Caffeine.
Puerto Cabello ...	1.05	0.16
Maracaibo	1.84	0.15
Cauca	2.03	0.36
Caracas	1.43	0.07
Ceylon	2.06	0.30
Java	2.34	0.05
Trinidad	1.98	0.09
Para	1.08	0.20
Granada	1.90	0.20
Surinam	1,83	0.20
Guayaquil, ariba ...	1.20	0.20
Cameroons	1.83	0.12
St. Thomé	2.09	0.12
Bahia	2.04	0.16
Samana	1.82	0.16
Cap. Haiti	2.07	0.16
Domingo	1.98	0.16

The cultivation of cocoa is now succeeding in Samoa. The climate is found to produce robust, hardy, and luxuriant trees, which yield abundant crops with but trifling cultivation. The kinds chiefly in favour are the Caracas and *Forastero* variety and a new hybrid, partaking of the best qualities of the two.

"Hardness of break," "flintiness," "soapiness," "grey colour," etc., seen in beans all betoken insufficiency of ripeness and curing; the nearer the bean is to the even-coloured "red" peculiar to its growth, the better prepared and the riper will it prove to be.

The principal sales of raw cocoa take place at the Commercial Sale Rooms, Mincing Lane, London, on Tuesdays.

Three years' business in the United Kingdom:—

	1899	1898	1897
Imports lbs.	43994896	42833993	34533531
Home Consumption „	34013812	32087084	27852152
Exports . „	11078588	9666345	14728311
Stocks in bond . „	14173000	16514000	16016000
Value of imp'ts	£1321482	£1347822	£927620
„ exp'ts	341676	310733	405805

Cocoa, Manufactured—The growth, harvesting, curing, and shipment of cocoa having been fully described under "Cocoa (Raw)," we may here proceed to refer to the various ways in which manufacturers deal with the beans upon their arrival in this country.

These *beans*—also often called *seeds*, *nuts*, or *berries*—are, after the duty (1d. per lb.) has been paid, first roasted, then broken up into small fragments, put through a winnowing machine, and thus separated into (1) *Cocoa Nibs* and (2) *Cocoa Shells*, or husks. The beans lose weight to about 15 per cent. in roasting.

The *nibs*—rich, glossy pieces of kernel—are, of course, the most valuable, and are capable of yielding a thin, rich liquor of genuine cocoa; in fact, this was the popular form in which cocoa was used in England a century ago; but the time and trouble required to cook it being more than most people can afford, and the beverage itself being too rich and unpalatable for most people, the demand

in retail shops for cocoa nibs was never very extensive, and has long been diminishing.

It is only since manufacturers like Cadbury, Epps, and Fry, by scientific skill and elaborate machinery, have succeeded in producing cocoas ready for immediate use without boiling, that the public at large have taken to them.

For several years the consumption of cocoa has been increasing enormously, while the use of coffee has been steadily declining. The annual consumption of cocoa in this country was :—

In	1830	about	500,000lbs.
,,	1858	,,	2,860,034 ,,
,,	1864	,,	3,862,273 ,,
,,	1880	,,	10,566,159 ,,
,,	1890	,,	20,224,175 ,,
,,	1899	,,	34,013,812 ,,

These figures only show the weight of *raw* cocoa passed through H.M. Customs, but the annual output of the manufactured cocoa powders and chocolates must be considerably more.

There are also some 5,000,000lbs. of manufactured cocoa powders (mostly Dutch) sent to this country, but the sale of these has fallen off remarkably, while the British makes have steadily increased.

Foreign Manufactured Cocoas.	1899	1898	1897
Imports . lbs.	5262052	8127191	9068175
Home Consumption ,,	5525749	6492634	8192432
Exports . ,,	728627	721093	574768
Stocks in bond ,,	286000	1249000	382000
Value of imports	£513000	£620717	£603926
,, exports	80011	78393	60079

Manufactured cocoas of the present day may be conveniently divided into two types, namely, *Thick Cocoas* and *Thin Cocoas;* that is, according to the thick or thin beverages they yield when the powder is stirred in boiling water, and thus made ready for use with or without boiling afterwards.

THICK COCOAS comprise *Prepared Cocoas, Homœopathic Cocoas, Caracas Cocoas, Pearl Cocoas, Soluble Cocoas, Chocolate Powders, Maravilla, etc.,* and in manufacturing them the plan generally adopted is similar to that invented in 1810 by the late Mr. Daniel Dunn, of Pentonville, although other improvements have from time to time been since introduced.

The nibs already described are, by the aid of steam, while grinding them between granite stones, reduced to a semi-liquid state. Sugar and arrowroot, or other farina are then added, and the whole thoroughly mixed in a steam jacketed pan or mixing machine called the "Mélangeur," and not unlike a mortar mill. When sufficiently mixed the soft paste is turned out of the mixer and allowed to cool, and after grinding through a mill or steel rollers it is finally sifted to the desired fineness of the powder required.

Cocoa nibs containing about 50 per cent. of fat, and being therefore too rich for most constitutions, the sugar, arrowroot, etc., are added chiefly for the purpose of making the beverage more generally acceptable to ordinary tastes and digestions. Less milk is needed, and they help to prevent the insoluble particles of the cocoa from settling to the bottom of the cup—for be it noted that cocoa is never wholly soluble—and being cheaper than cocoa nibs they enable the manufactured article to be sold at a lower rate.

Of course all these "Thick Cocoas" vary in quality and price according to (1) the proportion of cocoa nibs employed; (2) the quality of the nibs, and the quality of the sugar, arrowroot, or other farina; (3) the skill employed in selecting the most suitable varieties of nibs, and adjusting the proportions of the several ingredients; (4) the care taken in picking out and rejecting all light, damaged, and inferior pieces of nib.

Some of the leading English manufacturers spare no pains or expense to produce the very best possible article, and rely upon the discernment of the public for lasting patronage. Other manufacturers make little effort beyond substituting inferior materials, and imi-

tating as closely as possible the titles, labels, style of packing, &c., of the more renowned firms.

In many instances the amount of low class beet-root sugar, damaged sago and flour, potato flour, with artificial colouring and flavouring matter, is so considerable, and the amount of cocoa nibs so small and of such coarse, poor quality that the nutritive value of actual cocoa in a cupful must be infinitesimal. Even Venetian red, chicory, cocoa husk, brick-dust, umber, oxide of iron, and other abominations have been found in some of them.

Many of these sophistications, if not palpable to the taste, may be detected by a microscope if they be of vegetable origin, or if of a mineral character by chemical reaction. If kept for any length of time—and they often are—a very nauseous smell is developed, and an earthy or putrid taste, the result being disgust to the consumer, irreparable loss of reputation to the retailer, if not also a loss of cash paid for the rubbishy compound.

It is much to be regretted that in most of the "Cocoa Rooms" these lower qualities of cocoa only are served, thus creating a permanent aversion to cocoa in many persons who naturally expect to obtain it in perfection at those establishments.

Retailers, especially new beginners, should beware of having such goods "specially prepared" for them, and packed with their *own names on*. There are always manufacturers who unable to sell under their own label are ready to imitate the labels, style and colour of paper used by the best-known firms, but these deceptions have always failed more or less ignominiously. The grocer may for a short time feel proud to see his own name on the imitation, but the public know what it all means, and the result usually is more notoriety than popularity.

Indeed, looking back through 40 years we know of no case where *imitations* have succeeded either in cocoas or any other commodities.

THIN COCOAS.—These include Cocoa Essences, Cocoa Extracts, Concentrated Cocoas, &c., manufactured by abstraction, and are of more recent introduction.

They come from pure cocoa, without any addition of sugar, arrowroot, or other farina. Messrs. Cadbury Brothers, of Birmingham, were among the first to make this kind. Several other manufactures have since followed suit, but Cadbury's is probably the best known, and indeed its sale seems to increase at a much faster rate than that of any other make.

In manufacturing these *Thin Cocoas* each firm has, of course, its own particular process, but generally about two-thirds of the natural fat or butter is abstracted either by the aid of fine canvas bags and a powerful hydraulic pressure, which squeezes the excess of fat out of the nibs while in a liquid state, and leaves the remainder of the cocoa a dry powder, or the melted cocoa may be allowed to stand a few hours and cool, when the fat or butter, which will then have risen to the surface, may be easily removed. (See *Cacao Butter*.)

Some say that the abstraction of its fatty constituent from Cocoa is tantamount to adulteration. However this may be, the surplus fat being removed, the remaining portion of the cocoa is afterwards reduced to an impalpable powder, and is then ready for packing either in canisters or cardboard packets.

A teaspoonful of this powder put into a breakfast cup and filled up with boiling water or milk and water produces a dark thin tea-like beverage, which is very refreshing and enjoyable to some who cannot so well digest the thicker manufactured cocoas already referred to.

As with *Thick Cocoas*, there are various qualities of these Essences, Extracts, Concentrated Cocoas, &c.

Sharp competition among manufacturers has tempted some of them to use the very lowest priced or damaged raw

cocoas, but their productions, although *pure* in a sense, are really very inferior, and have no permanent sale.

When it is remembered that the market prices of raw cocoas range from 35s. to 100s. per cwt. it is obvious there must be a wide difference in qualities, although all may be "pure," or without addition.

Many of the lower qualities of cocoa powders are, however, chemically coloured or dyed a dark colour, so as to make them *go farther*, also perfumed so as to hide or disguise the rank and disagreeable flavour of the inferior growths of cocoa used in their manufacture.

In two or three Dutch manufactures the true colour and the natural flavour of cocoa are quite lacking, a false colour and flavour being substituted by artificial means, which give the beverage a blue-black appearance and a sort of "cattle-food smell," both of which are entirely foreign to natural cocoa. This result is attributed to the addition of 2 to 4 per cent. of soda, potash, magnesia, or ammonia during manufacture, which not only deepens the colour, but also, on the addition of boiling water, saponifies the natural fat remaining in the cocoa, thus forming a sort of emulsion which for a short time holds the insoluble matter in suspension, and gives a fictitious appearance of strength.

The percentages of alkali and perfume thus subtly employed are, however, so small that no prosecutions for adulteration have, so far, been instituted in this country for stopping their sale, although Dr. Sidney Ringer, perhaps the greatest English authority on the action of drugs, states that the continued "administration of alkalies and their carbonates renders the blood poorer in solid and in red corpuscles, and impairs the nutrition of the body." Of ammonia, carbonate of ammonia, and spirits of ammonia, he also says: "These preparations have many properties in common with the alkaline potash and soda group. They possess a strong alkaline reaction, are freely soluble in water, have a high diffusion power, and dissolve the animal textures."

The sale of these Dutch cocoas seems to be falling off in England, whether owing to the "slimness" of the drugging and colouring or to the "slimness" the Dutch have shown in South Africa we cannot say, but perhaps both.

The leading English cocoa manufacturers have, however, far surpassed all foreign competitors, and send out their productions without either artificial colouring or perfume.

The beautiful rich mahogany colour natural to cocoa of good quality, and its exquisite aroma—delicate, but distinct—once recognised by the intelligent cocoa drinker, are not often forgotten. (See *Epps's Cocoa.*)

A confirmation of this is shown by the remarkable fact that during the last few years it has been only the higher classes of cocoas, thick or thin, that have increased in consumption. In regard to many other commodities—tea and coffee, for example—the lower and cheaper sorts seem to be prevailing; but with cocoa the contrary is the case.

Most of the cheap cocoa mixtures popular a few years ago have gone to the wall, and the makers have either failed, given up business, or turned their attention to superior productions.

Others there are from time to time trying to introduce trashy low-priced grades, but their efforts appear to be short-lived; and it is only the superior and higher-priced cocoas that seem destined to enjoy public favour in the future.

Gardner's patent "Rapid" Sifter and Mixer, freely used for cocoas. Prices from 50s. to £100. Catalogues from Wm. Gardner and Sons, Engineers, Gloucester.

See also *Homœopathic Cocoa, Pearl Cocoa, Rock Cocoa, Soluble Cocoa.*

Manufacturers and Merchants.—Cadbury Brothers, Bournville, near Birmingham; Compagnie Francaise, Lon-

don Works, Bermondsey New Road, London, S.E.; J. Epps and Co., Ltd., Holland Street, Blackfriars, London; J. S. Fry and Sons, Union Street, Bristol; Hedley, Gamble, and Crosfield, Circus Street, Liverpool; Morris and Jones, 13, 15, and 17 Sir Thomas Street, Liverpool; Clark, Nickolls, and Coombs, Ltd., London, makers of cocoa, pure and simple, put up in packets at 1d., 3d., and 4½d. each, and in tins ¼lb. at 6½d., ½lb. at 1s. ½d., and 1lb. at 2s. 1d.

Cocoa Butter.—There are two distinct kinds. (See *Cacao Butter* and *Cocoanut Oil.*)

Cocoa Essences, Extracts, etc.—See *Cocoas* (*Manufactured.*)

Cocoa or **Cacao Nibs.**—These are obtained by roasting the beans (sometimes called seeds, berries, or nuts) of *Theobroma cacao*, from which drinking cocoas are made. They are roasted in the same way as coffee berries; and when the aroma is sufficiently developed they are passed through a "kibbling" mill, which crushes or smashes them into small irregular pieces, liberating the nib or kernel from the husky covering or shells, which latter are afterwards blown off in a winnowing machine. (See *Cocoa Shells.*)

Cocoa nibs vary in quality and value as much or more than coffee berries, and should always be used fresh. The weight lost in roasting and winnowing varies from 15 to 25 per cent.

The best nibs contain in every hundred parts, 50 of cocao butter, 20 albuminoids, 13 of starch, sugar, etc., 4 of salts, 2 of theobromine, and 11 of other substances.

The trouble and time required in preparing a palatable beverage from the crude nibs, and so as to retain that invaluable alkaloid known as *Theobromine* (a homologue of theine, but far more powerful in its physiological action), is greater than most people can well afford, and it must be admitted that the most successful attempts fall far short of producing the delicate breakfast beverages obtained from the skilfully prepared cocoas of firms like Epps's and one or two others, who have made a life-long study of the business.

The best way of preparing Cocoa Nibs is first to bruise them, then tie them loosely in a piece of thin muslin, put them into cold water, and let them simmer for three or four hours. The liquor must stand till quite cold, when the oil may be skimmed off, which will render the flavour much more agreeable; when required for use, boil it up again, add milk and sugar to suit the palate. (A quarter-of-a-pound of nibs is sufficient for three pints of water.)

No other warm drink approaches cocoa in its nutritive character, because while performing to a certain extent the exhilarating work of tea or coffee, it presents to the human system a very considerable quantity of nitrogenous and carbonaceous matter. This advantage is partly due to the fact that cocoa is taken in the form of an emulsion, instead of an infusion or decoction.

Cocoa or **Koker Nut Oil.**—(See also *Cacao Butter.*) This product is also known as Copra Oil and Cocoa-nut Butter.

It is a rich but coarse granular white oil, of buttery consistence, mostly imported from Ceylon, India, Java, and the Pacific Islands, where it is extracted (either by decoction or compression) from the albumen or ripe kernel of the large, brown, rough, and thick-shelled milky cocoa (or coker) nut, *Cocos nucifera*, usually sold in our fruit shops (but is of quite different origin to the cacao butter obtained from the seeds or nibs of *Theobroma cacao*, which yield the ordinary drinking cocoas and chocolates).

The oil is mostly extracted by cold dry expressure, although there is a wet process as well, from the dried kernels or "copra."

Eight or ten nuts will yield a quart of oil. Boiling the pulp breaks open the cells, and as the oil is liberated it rises to the surface, and is skimmed off. The pulp is also submitted to pressure, and the cake or refuse left after the oil has been expressed is termed *poonac*, and is

used either for feeding stock or for manure.

Cochin, Ceylon, Madras, and Bengal are the chief seats of production.

The Cochin oil is the best, its superiority over the Ceylon product is owing to the fact that only the white sun-dried Copra is used in its manufacture. There is an inferior quality made at Calicut from unseasoned nuts, but it is only exported to Asiatic ports.

Colombo oil is not so much appreciated, because the fruits are there usually dried by smoke. Indeed, no pure oil can be expected from nuts dried in smoke.

In Jamaica, after being husked, the nuts are broken up, and the pieces laid near a fire until the meat will come away from the shell. Then the meat is washed, the thin black skin that lies between it and the shell not being removed. After being washed, the meat is grated, placed in a vat, boiling water poured over it, and the whole strained. When the water cools, the oil floats on top, and is skimmed off and cooled, and is ready for shipment. The oil sells for 6d. per pint bottle. It is now proposed to introduce into Jamaica the manufacture of cocoa nut butter.

When fresh, cocoa nut oil has the characteristic odour and sweet taste of the milky cocoa-nut itself, but soon turns strong, rancid, and unpleasant. It is composed largely of fatty acids, particularly the glyceride of lauric acid.

Although by Europeans it is considered too strong in flavour for table use, and seldom used even in kitchen cookery, it is regularly used instead of butter, lard, etc., by the poorer natives in Ceylon and other hot climates, where it can always be had fresh and sweet.

In these tropical countries it is always in a liquid state, fluid and limpid as water, but solidifies at about 60° Fahr., and consequently generally appears in England and other cold climates as a solid, opaque, and unctuous substance, like butter or lard, white and wax-like.

Vast quantities of this oil are burned in lamps throughout the whole Indian Archipelago, although it does not give a very clear light.

A tumbler half filled with water has oil poured in to the brim, two lighted sticks are the wicks, and every native glories in a display of lights about his grounds at the approach of night.

Although largely superseded by other oils in candlemaking, and by palm kernel oil, earth nut oil, etc., in soapmaking, it is still employed in these manufactures on account of its extreme whiteness, and its ability to absorb much more water than fat does. Being also very soluble in salt water, it is specially adapted for making *marine* soap; some is also employed in leather dressing and cosmetic manufacture.

Lately it has been used in the production of artificial butter, and the article is pronounced far superior to the ordinary oleomargarines. It is also said to be used in America in adulterating cheese, lard, and other oils.

The value of this butter or oil was originally discovered by a Dr. Schlunk, and first manufactured by P. Muller and Söhne, at Mannheim.

Consumption now stationary.

Value of Cochin, about 28/- per cwt.; Mauritius and Ceylon, 25/-.

Apply to C. Windschuegl & Co., 1 Leadenhall-street, London, E.C.

Cocoa Nuts.—There are two quite different products often called cocoa nuts—(1) the seeds or beans of *Theobroma cacao*, from which drinking cocoas and chocolates are made (see *Cocoa, Raw*); and (2) the large milky cocoa nuts (*Cocos nucifera*) sold by fruiterers (see *Coker Nuts*). Therefore, without some further distinguishing qualification, the term *cocoa nuts* may lead to confusion.

Cocoa Shells or **Husks.**—The chaff or skins of cacao beans separated from the nib. (See *Cocoa or Cacao Nibs.*)

An economical but somewhat bitter beverage called *Cocoa Tea* is made by boiling or stewing these shells in water. They are very popular in Ireland, where they are known as "miserables," and

are regularly transported from England for this purpose.

It has been found that different growths of cocoa contain varying proportions of husk, in comparison with nib or kernel, thus:—

Name as regards origin.	100 grams of seed consist of Kernels. Per cent.	Shells. Per cent.	Average weight of a seed unhusked. Gram.
Java cacao	92.9	7.1	1.236
St. Thomas cacao ...	92.3	7.7	1,348
Surinam cacao II. ...	91.4	8.6	1,149
Trinidad cacao	90.9	9.1	1,286
Para cacao	89.8	10.2	1,136
Porto Plata cacao ...	89.5	10.5	1,292
Hayti cacao	88.6	11.4	1,317
Bahia cacao	88.4	11.6	1,379
Puerto Cabello cacao ...	88.1	11.9	1,598
Surinam cacao I. ...	88.1	11.9	1,637
Machal-Guayaquil cacao	88.0	12.0	1,537
Arriba Guayaquil ...	87.0	13.0	1,628
Carupano cacao ...	86.8	13.2	1,469
Caracas cacao	86.6	13.4	1 504
Grenada cacao	86.6	13.4	1.230

So it is evident the amount of shell in a quantity of raw cocoa is a consideration for manufacturers.

Besides *theobromine*, the shells also contain a certain amount of *theine*, hence they are not at all to be despised.

The Customs duty on imported cocoa shells (if free from cocoa powder) is 2/- per cwt.

Sometimes they are ground and used in the manufacture of low-priced cocoa powders, also in the manufacture of some kinds of cattle foods. The lower priced chocolate confections are also now made pretty largely from cocoa shells ground up and mixed with glucose, starch, and colouring matter. The market value of cocoa shells varies considerably, and depends on their freshness, and whether consisting of mere husk or containing pieces of damaged nib, cocoa dust, etc., there being considerably more nutriment and less bitterness in the beverage made from the latter.

Apply to M. E. Holdsworth, 3 Norfolk-street, Bradford.

Cocoa Tea.—A name used in some districts for *Cocoa Shells*, or the beverage obtained by boiling or stewing them in water.

Confusion in Names.—A striking example of the ignorance of tropical products on the part of dwellers in temperate regions is instanced by the confusion still existing in the minds of shippers, merchants, tradesmen, and the public generally, regarding *Cacao*, *Coca*, *Coco*, *Cocoa*, *Cuca*, *Coker*, or *Koker*, etc., and the numerous compounds prepared therefrom.

It should be clearly remembered that the four following are quite separate classes of plants, and should not be confused:—

1. The coco, or *Caladium esculentum*, above referred to.

2. The chocolate tree or *Theobroma cacao*, and its congeners, from the beans of which are derived cocoa nibs, drinking cocoas, chocolates, cocoa essences, cocoatina, cocoa shells, Rock, Flake, Pearl, Homœopathic, etc., and a host of similar prepared cocoas, as well as cacao (or cocoa) butter.

3.—The coker (or cocoa) nut palm, *Cocos nucifera*, which produces the large hollow milky nuts, sold by fruiterers, costermongers, etc., and from which are obtained cocoanut oil, desiccated cokernut, copra, etc., the outer coarse fibrous husk of these nuts being also used for scrubbing floors, etc., as well as for making into cocoanut fibre matting. (See *Coker Nuts*.)

4. The coca (or cuca) bush, *Erythroxylon coca*, celebrated for its stimulating leaves, which, when chewed fresh, impart extraordinary endurance to the natives in South America, Ceylon, and other regions where it is grown. *Cocaine*, a very powerful drug, is also an extract from these leaves. These four plants and their products, although somewhat alike in name, are as distinct as the products of the walnut tree, the gooseberry bush, the potato plant, and the nettle. Each of them is fully described under its respective heading.

Cocoas de Mer—the French name for the curious double or Sea Coker Nuts, *Lodiocea Sechellarum*. These remarkable fruits are peculiar to the

Seychelles Islands, and grow nowhere else.

Cocos Petits. — French term for *cocoa beans.*

Cod-Fish. — Da. *Kabliau*; Du. *Kabeljaauw*; F. *Morue Cabillaud*; G. *Kabeljau*; It. *Baccala*; Port. *Bacalhao*; Rus. *Treska*; Sp. *Bacalao*; Sw. *Kabiljo*; W. *penfres.*

These deep-sea fish (*morrhua vulgaris*) abound most on the great Newfoundland Dogger Bank, a submarine plateau, some 600 miles long and 200 broad, but they are also hooked off Norfolk, Suffolk, Essex, Lincolnshire, and the Orkneys, Shetlands, &c., where they spawn about February and are in the best condition from October to Christmas.

The Cod is one of the best known of white-fleshed fish. Fishermen often keep them alive a long time. The "sound," or swimming bladder, is pierced with a needle and the air disengaged, so that when the fish is put into the well of the boat he sinks to the bottom and remains alive. They are afterwards turned into boxes 4 or 5 feet wide and deep, and about 10 feet long, and the boxes then floated or sunk in a tidal river, and thus left for six or eight weeks without food, but the boxes being perforated at the bottom the water is renewed as the tide goes in and out.

Sometimes old welled smacks are used for this purpose, these being kept in the tideway, or moving so as to produce a constant change.

They are only removed from these prisons as required for the markets, and are killed by a stroke on the head with a mallet. In some places a still more cruel way is adopted. After removal alive from the boat-well they are tied by the tail to a rope, many of them together, and sunk in deep water, their tails becoming sore and lacerated by the string. Cod in good condition should have the sides undulated, as if it were ribbed. It should be round and plump near the tail, the hollow behind the head should be deep, and the flesh very firm.

The cod fishery off Norway, Newfoundland and Iceland is an important industry. Loffoden is the great centre, yielding more than half the whole winter's catch.

Barrelled Cod.—A barrel contains about 40 fish. As soon as killed by an incision behind the gills the fish are beheaded, split open, cleansed, the roe and liver removed and placed in separate tubs. The fish are then salted and stowed in beds, head to tail, in the ship, a layer of salt being placed between each layer of fish. After a few days, when they have well drained, they are again salted and stowed. Finally they are packed in barrels, after being previously cut into large pieces.

Considerable quantities of cod, partly salted, wet and dry, are prepared at St. John's and sent to Southern Europe chiefly for consumption during Lent, and other fasts of Roman Catholics.

Cod-roe salted in barrels is a valuable commodity. France alone purchases £40,000 worth from Norway every year, as "rogue" or bait for the sardine and anchovy fisheries.

Dried Salt Cod.—(G. *Stockfisch.*) The cod, after being beheaded, opened, cleansed, and salted, is laid out on the shingle of the shore, or on low walls, and dried in the sun. Dry salt cod weigh about 5 lbs. apiece.

Pickled Cod is sold by the barrel; *Trawled Cod*, at per fish; *Hooked Cod*, by the score; and *Crimped Cod*, by the pound.

Cod Liver Oil and **Cod Oil.** — F. *Huile de Foie de Morue;* L. *Morrhuæ Oleum.*

The liver oil is pale yellow, with a bland, fishy taste, obtained from the liver of the common cod fish, *Gadus morrhua*, and allied species on the Northern coast of Norway, the great Dogger Bank of Newfoundland, the Rockall grounds of the outer Hebrides, also the Northern waters of Asia and America.

The average production is about a million gallons yearly, one hundred livers yielding one gallon of oil.

Bergen exports from 30 to 40 thousand barrels of liver oil a year, value £3 to £5 per barrel. The fish when landed are handed over to a fish-room keeper, whose duty it is to split open the fish and deposit the livers in small tubs holding 17 or 18 gallons each.

The tubs are soon afterwards collected from the different fish-rooms and conveyed to the manufactory. The livers are here thrown into tanks filled with clean cold water, and after being well washed and jerked over are placed on galvanised iron wire sieves to drain. They are next put into covered steam jacket pans and heated gently for about 45 minutes, and when again cooled the livers are found to have settled and more oil floating on the water.

The best oil is known as the non-freezing pale or shore oil, got by steaming to 180 deg. the fresh liver, and afterwards filtering or purifying it. The finest Loffoden non-freezing cod liver oil is generally worth 3s. 3d. to 3s. 6d. a gallon in London or Hull, and is usually imported in tin-lined barrels of 25 gallons each, the finest non-freezing Norwegian medicinal being 3d. to 6d. per gallon less.

When the livers cannot be treated fresh, putrefaction soon sets in, and the oil then obtained is somewhat nauseous, and known as *pale brown*, or *straits*, oil.

A still coarser grade is made when the livers of cod, herring, haddock, ling, coal fish, &c., are all boiled in water; this is very strong, and is termed *dark brown*, or *banks*. The latter quality is chiefly used in leather-making.

Cod liver oil is generally recommended for persons suffering from consumption, loss of flesh, rheumatism, general decay, and debility, at the rate of ½ oz. to 4 oz. a day. The best is rather nauseous to some constitutions at first, but may be taken in spirit, water, or milk, and the nausea first experienced soon subsides, till it can be taken in its pure state and in considerable quantities.

Its value is due to its comparatively easy and rapid assimilation. To completely mask the odour and taste would be worth a fortune to any man. The nearest success appears to be with oils of wintergreen, sassafras, bitter almonds, neroli, or clove.

Cod oil does not necessarily imply cod *liver* oil, but means oil obtained from any other part of the fish. Pure cod liver oil contains 95 to 98 per cent. of olein, palmitin, and stearin, has a specific gravity of .920 or .927, and will not freeze at 14 deg. A drop of sulphuric acid added to a few drops of the pure oil on a porcelain slab develops a violet colour, which soon changes to a yellowish or brownish red.

As already observed, the natural pale oil obtained from the fresh livers is doubtless the best; but as many of the pale oils lack medicinal value through having been artificially bleached, some authorities recommend the brown oil, notwithstanding that its colour is evidently due to decomposition. Apply to C. Windschuegl and Co., 1 Leadenhall Street, London, E.C.

Coffee.— Abysn. *Kaffa* or *Caffia*; Ar. *Bun*, *Karwah*; Da. *Kaffe*; Du. *Koffy*, *Koffiboonen*; Eth. *Bun*; F. and Sp., *Café*; Ger. *Kaffee*; It. and Port., *Caffé*; Malay, *Kopi*, *Kaffa*, or *Caffia*; Per. *Tochen*; Pol. *Kawa*; Rus. and Sw., *Koffe*; Tur. *Chaube* (the bean), or *Kahve* the infusion); W. *Coffi*. (See also *French Coffee*.)

Although everyone is familiar with coffee as a beverage, very few know much about its origin and history, as to where it was first grown, when introduced, how cultivated and cured.

It is supposed to have originated in Ethiopia, then found its way to Abyssinia as early as A.D. 875, and there are authentic accounts that it was introduced into Arabia from Southern Abyssinia by a Mahometan high priest about the year 1500. It has been found in a

wild state over numerous points of the African Continent, and has been traced through Syria, until in the year 1554 it became the favourite drink at Constantinople; for we read of the Oriental coffee-houses being thronged night and day, the lower classes actually begging money with which to buy it, and the refusing to supply a wife with a liberal amount of coffee was admitted in law as a valid excuse for divorce.

Bacon in 1600 writes: "They have in Turkey a drink called coffee which comforteth the brain and heart, and helpeth digestion!" About 1652 it made its first appearance in Great Britain, the first, or one of the first shops, for its sale being established in London by a Greek named Pasquet Rossie, the servant of an English merchant—a Mr. Daniel Edwards—who had got acquainted with the beverage in the East and brought a quantity home with him from Smyrna; but who to save himself from the annoyance of too numerous visitors anxious to taste the new drink, established his servant in a house in St. Michael's Alley, Cornhill, where it could be bought. Another account says coffee was sold in Oxford as early as 1640 by a Jew named Jacobs; and according to the journal of one Thomas Rugg, dated September, 1651, coffee was then "sold in a liquid state at the 'Sultaness' Head, a Cophee-house, by the Royal Exchange, London."

Evidently coffee-houses soon became fashionable places of resort and quite numerous all over London, poets, wits, politicians and philosophers making regular meeting-houses of them. Who has not read of the events at Will's, Button's, Paine's, Garraway's, and St. James's coffee-houses? Coffee is now spread over the civilised world; and consists of seeds, beans, or berries of the evergreen trees or shrubs belonging to the genus *Coffea*. It probably takes its name from Kaffia, the most productive coffee region in Abyssinia. The chief of the species are *C. Arabica*, a shrub growing four to eight feet high; *C. Liberica*, often growing 30 feet high; and the "*Marago-gipe*," as found in the province of that name in Brazil. Some authorities think the differences between them are merely due to climate and methods of cultivation.

The plants are usually raised from the seed in nurseries, and when one year old and about a foot high they are taken up with the earth around them and set out, 4 to 6 feet apart, in plantations. Here they are allowed to grow 5 to 10 feet high.

The main stem grows upright, and is covered with a light brown bark. The branches grow out horizontally and opposite each other, crossing at every point; the leaves, also opposite each other, are oblong in form, dark green, shining and leathery. They are 4 or 5 inches long, and 2 broad in the middle, sharp-pointed, and somewhat resemble Portugal laurel or bay leaves.

The flowers grow in white clusters at the root of the leaves and close to the branches. They are tubulous in shape, pleasant smelling (not unlike jessamine), and spread open at the top, where each flower is divided into five parts.

The tree begins to bear fruit at three years old, and yields ½lb. to 6lbs. yearly for 20 years. Usually three gatherings are made each year, the tree continuing to flower for eight months, and one may see buds, snow-white flowers, as well as green, yellow, and red ripe fruit, all on the tree at the same time.

The fruit or berries, which follow the flowers, grow in bunches, three to twelve in number, not unlike small cherries, at first green, and then yellow, but turn a dark red when ripe; each "cherry" or pulpy envelope, called the *epicarp*, enclosing in a pod two of the familiar nibs or berries which lie with their flat sides towards each other. The pods are called "cherries" when fresh gathered, because they grow inside a white pulp, thus covered by the husk or outside shell. In addition to the outer ligature, each berry has its own thick covering, or *endo-carp*, called "parchment."

When gathered, the coffee cherries are fermented, then hulled or uncovered,

and separated by machinery, the parchment is winnowed off, and the berries then dried in the sun, sized, and marketed.

Some of the pods contain only one berry, and this of rounder form than the others. These single berries, when picked out, or separated, are sold as "virgin," "male," or "*Pea-berry*" coffee.

Many attempts have been made to dry coffee by machinery, as in fruit evaporating, but without success. It is best dried in the sun; and in Jamaica, where showers of rain are sudden and frequent, it is exposed on large terraces or floors, where a large number of hands have to be waiting about in readiness to sweep the coffee off the "terraces" into covered sheds directly there is the least sign of rain.

There are about twenty different supposed species of the coffee plant, and many of them are being cultivated in several of the warmer regions of the world, wherever there is a mean annual temperature of about 70° Fahr. One labourer can look after about a thousand trees.

Brazil produces about two-thirds of all the coffee in the world, and most of that consumed in England comes from there.

It is the principal wealth of the States of Sao Paulo, Rio de Janerio, Bahia, Céara, Minas, and Geraes, which are the chief centres of production. Most of these growths are called "Santos," because they are shipped from that port. There seems to be some prejudice against Brazilian coffee, for it is seldom sold as such in trade circles, but is generally passed off under some other name.

Coffee plantations in Brazil are called *Cafezals*, and the berries are stripped by hand from the branches, and dropped into baskets or on sheets. Each tree yields from three to six pounds yearly.

Green berries, leaves, and twigs are often carelessly stripped off along with the ripe fruit, and these spoil many otherwise good samples.

The newly gathered berries have to pass through many processes. One is a washing in shallow cisterns filled with water, then drying on prepared ground, called the *terreiro* (terrace), which is completely open to the sun, and has a hard floor of clay, stone, or cement. Here the berries remain about three weeks, but carefully watched, and removed under shelter in case of rain.

The red outer skin, or *epicarp*, of the berry then turns black, forming a brittle hull or shell, and the white sweet pulp dries up, leaving on the inner bean a very thin covering, called the *pellicula*, or "silver skin." (This coat is very undesirable, and gives the berries a very dingy and dull appearance when roasted.) From the *terreiro* the berry is conveyed to bins, or *tulhas*, where it remains until it is to be passed through the machines which prepare it for market. Then it goes first to the *ventilador* (windmill), where the dirt, stones, and sticks are blown away as much as possible; and next to the *descascador*, where it is hulled. The bean thus liberated is passed to the *brunidor*, in which it is freed from the *pellicula* (silver skin), and polished; thence to the *separador*, where it is separated more or less completely, according to size and grade, and finally filled in bags of 60 kilos (132 lbs.) for shipment.

"*Washed Coffee*" is prepared differently. The fresh gathered "cherry" is placed in a tank of water, whence it passes with the water into the *despolpador*, which partially removes the pulp. It is then conveyed, still mixed with water, into the *batidor*, or pounder, where by means of revolving iron arms the rest of the pulp is removed. The bean has now a very light bluish tint, almost white, and after a few days of drying it is ready for bagging. Not much is cured in this way, although washed coffee is by reason of its lustrous, bright and silvery appearance a fancy sort of article, and mostly goes to France, yet it is really inferior in flavour to coffee cured the ordinary way, and where the bean is allowed to absorb the pulp.

Jamaica, Ceylon, and Turkey coffees are considered to be superior growths, especially the celebrated "Mocha,"

although very little of the genuine Arabian Mocha reaches England, and the coffees sold under that name are generally grown in other countries, but possibly from Mocha seed.

Of all the methods adopted for the curing and exploitation of coffee, that adopted in Ceylon is perhaps the most perfect. At the end of the day the gatherers draw to the pulp-house, and there the produce is received and measured. The coffee "cherries" then go through the process of pulping. A man takes his seat on a "cherry-loft," and through an aperture lets the cherries gradually pour into the "pulper" below. In this way the outer red skin is taken off and thrown to one side, while the coffee runs along wooden channels into large vats.

After twenty-four hours' fermentation it is washed, by coolies trampling and raking it, to remove the mucilage covering the bean. The "parchment coffee," as it is now called, is removed and spread out upon tables to dry. When partially dried it is dispatched in carts to the "curing works" for final treatment. After being unloaded it is spread out on the "barbecues" to thoroughly dry. It then goes to the "peeling mill," which removes the dry parchment-like skin or *endocarp*, in which each berry or bean is concealed; thence it passes through the "farmers," "sizers," and "separators."

The beans are delivered into boxes, showing the different sizes of "flats" and "peas" (flat and round coffee). This completes the work done by machinery.

Now the coffee goes to the "garbling room," where it is measured out to women—a bushel to each.

Every bean is supposed to be examined, and all that are discoloured, broken, or faulty in any way are thrown out, and go under the name of "Triage."

The coffee is now ready for packing, and this is done in double sacks, each one containing 1½ cwt. net. The bags are branded with the estate's name, also the class of coffee. The coffee is then carted or railed to the nearest port for shipment to Mincing Lane, London.

A large amount of coffee is grown in the Dutch East Indies, Java, Sumatra, and Celebes, but these are a Government monopoly, the prices being fixed and the sales conducted through a Dutch Company, called the *Nederlandsche Handels Maatschappy*.

Then come the Costa Rica, Dominica, Demerara, Bourbon, Java, Martinique, and Hayti growths.

Coffee growing has also been considerably extended of late in Ecuador, along the coast of which country new plantations are constantly being made. The New Hebrides are also growing and exporting a growth very similar to that of Caledonia. The kernels are smaller but have a very fine aroma.

Guatemala Coffee maintains a very high reputation. Its growth is carefully conducted and it is all handpicked, berry by berry, and not as in Brazil, torn from the branches so as to damage the tree.

African Coffee.—On the West Coast coffee growing is fast superseding the palm oil industry, and the berry nearly approaches in quality the Central American.

A fuller description of the several growths of coffee may be found under their respective names elsewhere in this book. (See *Mexican Coffee*, etc.)

As to colour the following may be classed as *green* coffees:—The Guadaloupe, Martinique, Porto Rico, Porto Cabello, Gonaives, St. Mark, Cape Haytien, Port-au Prince. The *yellow* include Java, Mysore, Demerara, Manilla, Wynaad, Jacmel, and Jeremie. Mocha and Bourbon are considered particularly tender sorts, but exceedingly delicious if properly roasted.

Porto Rico now produces about 30,000 tons of coffee a year; the best of it comes to Europe and the inferior goes to Cuba. Lowland growths yield more prolificly than the upland, or hill-grown; but the latter is superior, and Porto Rican is all hill-grown. The

principal district is among the hills of the western third of that island.

Approximate estimate of the world's supply yearly:—

	Tons.
Brazil	400,000
Central America	95,000
West Indies	41,000
Dutch East Indies ...	40,000
British East Indies ...	16,000
Africa	8,000
Other places	5,000
Total consumption ...	605,000

Approximate consumption of coffee *per capita* in each country:—

	lbs.
Holland	21·00
Denmark	13·89
Belgium	13·48
Norway	9·80
Canada	8·0
United States	7·61
Switzerland	7·03
The Cape	7·00
Sweden	6·11
West Indies	5·00
Germany	3·94
South America	3·00
Mexico and Central America	3·00
France	2·73
Austria	2·13
Australia	2·00
Greece	1·24
Italy	1·00
Great Britain and Ireland ...	·70
Spain	·31
Russia	·22

Arrival of new crops in England—*Asiatic* and *African* sorts in January and February; Central American and Brazilian about July; West Indian from June to September; East Indian about Christmas.

The judging of coffee is much more difficult than that of tea, for tea is always ready for the water; but raw coffee samples have each to be properly roasted and ground before testing.

The active principles in coffee are an essential oil, caffeine, and tannic acid.

The *caffeine* is identical with the *theine* of tea, and most authorities consider this alkaloid the most important constituent. They say it retards the waste of the tissues of the body, stimulates the brain to greater activity, and exhilarates without intoxicating. On the other hand, recent experiments by Heerlein have shown that coffee so far as its alkaloid (caffeine) is concerned is neither a food nor decreases the bodily waste, but rather excites and increases it; the distillate from coffee was also found to have no diminishing effect on the consumption of oxygen, hence he considers that coffee should be struck off the list of direct or indirect foods, and its action as an exciter of the nervous system alone be recognised.

According to the latest examinations of the coffee berry by Professors Virchow, Graham, Brillat-Savarin, etc., its constituents have been declared accountable for the highly nervous state of the present generation, as well as for the increased rate of cases of madness, apoplexy, and of stomach diseases.

The aromatic substances, however, by their exciting action on the taste and smell, produce an increased desire for the enjoyment and digestion of food.

Coffee has also been credited with having wonderful effects on cholera, as was proved during the epidemic in Hamburg in 1892.

Diarrhœa is soon stopped by it; often a single cup made very strong is sufficient, and asthma is greatly relieved by it.

As a disinfectant coffee is one of the most powerful known, even the fumes of sulphuretted hydrogen—worse than rotten eggs—are readily destroyed by it. A small quantity, fresh ground and thrown on a red-hot shovel, is sufficient to disinfect a sick room. It not only overpowers the noxious smells, but really absorbs and decomposes them.

Perhaps it is not so generally known as it should be that coffee is also a powerful antidote to nicotine, so that

the liberal use of the beverage must be very beneficial to heavy smokers of tobacco, cigars, etc.

Strong black coffee (*café noir*) taken immediately after an elaborate dinner may usefully check a digestion over-stimulated by alcohol, but at other times strong coffee may unduly retard digestion, and even produce fatal results. (See *Coffee Essences.*)

Notwithstanding the low price of coffee in this country, where the better qualities are cheaper than anywhere else in Europe, the consumption is diminishing.

For over thirty years it has been standing at about 14,000 tons a year, notwithstanding the ever-increasing population. The following figures show how the coffee trade of the United Kingdom has declined during the last twenty-seven years:—The total imports into Europe from all countries in 1879 was 337,654 tons, of which 77,416 tons came to the United Kingdom; in 1888 (the year the Emancipation Act in the Brazils was passed) the European imports were 381,700 tons, of which 47,700 tons came to the United Kingdom, while in 1895 European imports had increased to 490,800 tons, and the United Kingdom imports had fallen to 38,800 tons; or, in other words, in 1869 our imports were about 23 per cent. of the total European imports; in 1888 they had fallen to about 13 per cent.; while in 1895 they were only about 8 per cent.

The last three years show—

	1899.	1898.	1897.
Imports cwts.	1,008,263	922,252	756,590
Home Consumption „	268,370	250,818	248,501
Exports . „	686,632	558,916	451,333
Stocks in bond . „	353,000	307,000	207,000
Value of imp'ts	£3,470,796	£3,590,871	£3,585,674
„ exp'ts	2,295,714	2,132,535	1,932,485

The finest coffee in the world is sent to the English markets and the import duty being very low the retail price should bring it within the reach of all.

The finest Porto Rican France ever imported is not to be compared to the grand old Mysores, the delicate Ceylons, the powerful Costa Rican, New Granada, and Honduras growths, and the curiously-flavoured Mochas.

Yet, while the quantity of tea and cocoa consumed here grows larger every year, the beverage which is their only rival at the breakfast table is becoming less and less popular. In fact, within the last forty years the consumption has decreased to less than one-half, while tea and cocoa have increased three or four fold.

There must be something besides the competition of tea and cocoa which is retarding the use of coffee. Several reasons have been suggested for the change. The Chancellor of the Exchequer, in his Budget statement, 1896, says it is because tea is cheaper, requires less milk, and is easier for people to make. Others attribute the falling off to the excessive use of chicory; but the *Medical Journal*, in discussing the subject, maintains that there is no force in the chicory argument. Coffee, the writer says, is quite as frequently adulterated abroad as here, and this will be confirmed by anyone who has travelled far beyond the beaten tracks of the Continent. Nor is there any special art required in the making of good coffee, though when our medical organ adds that "to say that we don't know how to make good coffee is a fallacy and its terms a misstatement," it must be admitted that his own explanation almost involves a like assertion. One fact is we do not drink our coffee strong enough; we destroy the aroma and dissipate the flavour in an ocean of hot water.

As for the vile concoctions served as "coffee" at some hotels, refreshment bars, restaurants, cocoa rooms, etc., would it not be fairer all round if our food inspectors took cognisance of such beverages and analysed them?

The weak coffee often served up at the breakfast table is far more objec-

tionable to the genuine lover of coffee than a mixture of champagne and water would be to the connoisseur in wine. Coffee, in fact, is positively unpleasant when drunk as a weak infusion, and it is quite true that "the only way to drink coffee in large draughts is to make a small quantity of strong coffee and add to it an ample amount of hot milk."

But another, and perhaps much weightier, reason for the decrease in coffee consumption possibly exists in the fact that it is commonly too violently roasted—indeed, *burnt*. No doubt this produces a blacker, and therefore a seemingly stronger, infusion; but this is a delusion and the result a blunder, for during this quick and excessive roasting an empyreumatic product is generated, which causes the beverage to disagree with many stomachs, and renders dyspeptic persons unable to indulge in it in consequence of the heartburn and flatulence it produces. A grocer should try this on himself and friends, and compare the effects with those of coffee only mildly or slowly roasted, and with or without the addition of chicory.

Up to ten or twelve years ago the roasting of coffee in England was left almost entirely in the hands of the coffee roasters, a separate, and generally supposed to be entirely distinct, body from the coffee *dealers*, and much of the decrease in the popularity of coffee is attributed to the careless way in which this was done. The roasters cannot, however, be blamed. Their charge of 2s. 6d. per cwt. was too low, and to protect themselves from loss, while returning good weights to the dealers, the roasters had recourse to the system of low or light-coloured roasts, quickly done, which yielded a return of 1½ or 2 lbs. more than a perfect roast could do.

If too great heat be applied in roasting, or too much hurry, it becomes acrid, the volatile and aromatic flavour is injured, and it acquires a nasty burnt taste; if not sufficiently roasted the beverage has a raw green taste, has very little flavour, lies heavily on the stomach, and is very likely to produce sickness, the too rapid roasting being more of a surface roast than a thorough and perfect one.

It should be roasted until the beans are swelled to bursting along the middle of the flat side and are brittle enough to break between the fingers. Coffee roasted in this way has a delicious aroma and a rich brown colour. The great desideratum is its drinking qualities rather than its appearance. A great many have the idea that coffee looks handsome when it is light roasted. Purchasers are often misled by the brighter appearance of light roasted, and associate it with the best quality, when in fact it is far from it. Its drinking quality should never be sacrificed to colour. The best flavour should be given to coffee that it is possible to obtain, and people who send out light roasted, as a rule, are very short-sighted. "Cinnamon-roast" is a phrase much used and is popular with the trade, but it frequently lacks the flavour that can be found in dark roasted. Low grades sometimes make a very acceptable drink if fully roasted and all their aromatic qualities developed. Two considerations are recommended—thorough cleaning before roasting, and only quick roasting when the coffee is at the right stage of the process. This includes rapid cooling, without which browning continues unevenly in the cooling apparatus. It does not pay to put out a coffee which is insufficiently roasted for the sake of a handsome colour.

Properly roasted coffee should have a chocolate brown colour and look bright and oily. It swells to about one-third more than its original bulk, but loses about 15 per cent. in weight. It need never lose more than 18 per cent. in roasting. But if roasted a blackish-brown it loses from one-fifth to a quarter of its raw weight and gains 50 per cent. in bulk.

If kept after roasting it should always be kept in a very dry place, air tight,

and away from any strong smelling goods, as it loses flavour, attracts odours, and absorbs moisture very rapidly; even the raw berries placed near sugar quickly deteriorate in value, and pepper is worse still. The coffee aroma, being so very delicate and fugitive, if once lost or injured is irrecoverable. All attempts at its full preservation seem to be failures.

It should never be "tinned" whilst warm from roasting, or it will "sweat" and deteriorate quickly, especially if "high" roasted—the essential oil of the coffee being exuded, instead of being properly distributed. The labels, also, should be pasted on the tins and well dried before the coffee is packed into them, or the tin will be liable to rust.

The changes in the berry by roasting appear to be the volatilisation of a small portion of the caffeine, a partial change of the sugar into caramel, a general breaking up of the oil and albumen cells, with the extrication of gases and a large quantity of water, and the development of the very powerful and volatile aromatic substance, a single drop of which is sufficient to scent a large room with the familiar coffee odour.

In roasting the *green* coffees already mentioned, a bright and continuous fire is best, these coffees readily assuming a reddish colour; and it becomes necessary to moderate the fire and remove them when all the grains are chestnut-coloured.

For *yellow* coffees the fire must be less intense and kept at a uniform heat; these coffees, although more tender, require a longer and more delicate roasting. When the roasting is completed the coffee should be cooled as quickly as possible in order to preserve its colour, and the main secret of good coffee is only to roast and grind it very fine, and as required for immediate consumption.

It is not well, however, to send small quantities of fine coffee to a general roaster. Roasters, like millers, deal in large quantities, and though returning proper weight, the product is not always from the materials first sent.

To add a bright polish to roasted berries, and to close the pores so as to keep it fresh a longer time, a glazing material—a little sugar or oil—is sometimes used in roasting; perhaps the latter is best, for the sugar is apt to make the berries dark in colour and sticky.

When Coffee is Roasted with Sugar.—Messrs. A. Juckenack and A. Hikger have recently studied the alterations which take place when coffee is roasted with the addition of 8 or 9 per cent. of sugar, as practised in Germany. The chief results of their experiments are as follows:—

First.—*Caffeine:* In the ordinary process of roasting coffee loses about 21 per cent. of its caffeine, and about twice that quantity when roasted with sugar, owing to the higher temperature which is required to caramelize the sugar so as to glaze the coffee.

Second.—*Fat:* From 9 to 10 per cent. is lost during the ordinary process of roasting, and about 20 per cent. in the glazing process. As a rule, the different constants of the fat show an increase on roasting by either method.

Third.—*Organic matter:* In their experiments the loss on the average amounted to 11·375 per cent. in the ordinary roasting, while in the glazing process it was about 10 per cent., allowance being made for the amount of caramel. This was determined by Stutzer's method. Twenty grams of the glazed beans were shaken in a machine for five minutes with 500 grams of water at 20 degrees C. The liquid was filtered, and the residue in 250 c.c. of the filtrate, after deducting the ash, was taken as caramel. In this way, on coffee glazed with 9 per cent. of sugar, as against 1·25 per cent. of sugar, there was found 1·40 per cent. of caramel, as against 1·25 per cent. on a sample of Java coffee glazed with 8 per cent. of sugar.

A coffee "roasting syrup," for treating coffee berries of a poor colour, is in the market, but it seems to consist merely of about 26·21 per cent. of water, 45·80 per cent. of fermentable sugar (or dextraglucose), 37·45 per cent. of unfermentable substances and dextrin, and about 0·54 per cent. of ash. Among the great advantages claimed for it are preserving the aroma of the coffee a long time, making the decoction look stronger, and making the roasted berries to hold about 7 per cent. more water than they otherwise would.

Sometimes coffee berries are steamed after being roasted, and then coated with a film of glycerine to prevent drying. As much as 20 per cent. in weight may be dishonestly gained in this way.

Of all food substances probably none have been fabricated or adulterated with such pertinacity as coffee.

Finely ground date stones have often been used for adulterating ground coffee, and the particles being mostly opaque, they are not easy to detect; but chicory, a harmless root with no particular physiological action, is the chief adulterant, and is added to coffee because by its use a weak infusion of coffee has the appearance of a strong infusion. The consumer sees a dark brown liquid which tastes a little bitter, and imagines he is taking a good cup of coffee.

There are several ways of detecting chicory in coffee:—

1. A spoonful of pure ground coffee placed gently on the surface of a glass of cold water will float for some time and scarcely colour the water, but if it contains colouring matter or chicory it will quickly absorb water and sink, giving a reddish brown tint as it falls.

2. Take up a pinch of the powder and press it between the finger and thumb; if it cakes or adheres, so that you can roll it in a pellet, it is a sign of chicory or other sticky adulterant.

3. Stir a teaspoonful of the suspected powder in a tumbler of cold water, and instantly place it on the table; if the coffee be pure it will rise to the surface and scarcely colour the liquid, but if chicory be present it will settle to the bottom, and the colouring will be seen, because the ground coffee is an oily substance which prevents the water attacking it, whereas chicory has no such protection, and so it absorbs the water and sinks immediately.

4. Take a sample of the powder and add to it about ten times its weight of water; add a few drops of hydrochloric acid to acidulate the water, and then shake up the whole mixture. The coffee powder will float, and will impart a yellow straw tinge to the water; but chicory, on the other hand, is immediately acted upon, and will speedily form a deposit, and the caramel colouring will give the water a dark brown colour.

5. Moisten a little of the ground coffee with water, then spread it out on a plate or piece of glass and test the particles. The soft or pliable pieces betray adulteration. Coffee particles are *hard*, and do not turn soft in water.

6. Chicory in coffee is also easily recognised through the microscope. In America it is quite usual to sell a compound of one-third coffee, one-third chicory, and one-third roasted rye; but it is very apt to absorb moisture rapidly, and becomes hard and lumpy. Roasted pea flour is also used and roasted acorns, bread crusts, etc.

Pure coffee, well prepared, is undoubtedly one of the most delicious beverages, also an excellent safeguard against certain diseases, such as gout, gravel, etc.

The plan now being adopted by retailers who have best studied the coffee question is to *roast their own coffee* hour by hour, as required for sale and delivery; and there is no doubt that by this system of rapid roasting of small quantities the aroma is more perfectly developed and secured, while the little trouble and outlay soon pays for itself. Parnall and Sons, of Bristol (the Narrow Wine Street firm) seem to have

made a special study of the mills and roasters best adapted to the requirements of the modern grocer. Nothing attracts the interest of a consumer more than seeing how an article is prepared.

Raw coffees, however common, if kept dry, always improve with age, and turn a paler colour.

They are sometimes artificially coloured "light," "dark," "green," "yellow," and the best way to detect this is to wash the berries in warm water and rub them with a dry towel.

A judicious blend of different kinds also produces a better liquor than any single sort, but the mixture should, of course, only be made after roasting, for old and dry coffees require a shorter time to roast than new and moist ones. The same applies to "mild" and "strong" coffees; one would be burnt while the other would only be half-roasted. Coffee grinds best in dry weather; in fact, it is really an excellent barometer, for on the eve of a rainstorm the berries become so damp and tough that the grinding is a much more difficult operation.

Another fact not generally known may be here noted: Drop a lump of sugar into a cup of coffee without stirring; if the air bubbles rise and crowd into the centre of the cup a fine day may be expected, if around the sides of the cup rain, and if scattered irregularly over the surface variable weather is denoted.

In France, Holland, and some other places where the beverage is held in the highest esteem, the coffee is roasted till black, and is ground much finer than in England, and probably owes much of its superior aroma to this latter fact.

There appears to be considerable difference of opinion as to the best or proper way to prepare coffee for the table. Some say:—For every pint required use 1 oz pure coffee. Earthenware jugs are the best, and all metallic surfaces and strainers should be avoided. The jugs should be made hot before the coffee is put in, and the water freshly boiled. After pouring on the water it is necessary to stir it up well, and cover with a cloth to preserve the heat and aroma. It should then be left to stand about seven minutes, and may, after the scum has been removed with a spoon, be poured into another hot jug or cup. Use the best white sugar, and cream or hot milk. If these directions be followed, and the finest freshly roasted coffees used, the result will be satisfactory in the highest degree.

The above is undoubtedly an excellent way, but it would also be a further improvement to let the infusion stand a few minutes before stirring it about.

Others say that the best way is to suspend a flannel bag, or percolator, in the mouth of the coffee pot, then put in the powder, and pour the boiling water on to it *slowly*, so that each grain of coffee gets well exhausted by the continuous stream of hot water. In this case care should be taken that the water goes right through the powder, and not through the exposed upper sides of the bag.

Coffee should never be boiled, or its delicate aroma is rapidly carried off by the steam. The water should, of course, be actually boiling when poured over the coffee; a cupful or two should be poured out and returned again to the pot. Some experts think two ounces of the powder not too much for a pint of water, whilst others hold that *one* ounce of *pure coffee* is enough. There are connoisseurs, however, who prefer an altogether fuller and stronger beverage, which is probably best produced by using Hergl's automatic machine, yielding a liquor exceedingly fragrant, and clear as a glass of wine.

In making coffee the berry should not only be freshly and finely ground, but freshly roasted, and in private houses, let alone hotels, etc., in coffee-drinking countries if a servant were to roast the after-dinner coffee before the guests sat down she would be thought as incapable as would the servant in England who made the tea on Monday for drinking on Tuesday. The best

aroma of coffee is lost in a few hours after roasting.

A cup of coffee stirred with a pod of vanilla acquires a very agreeable flavour.

Arabian Coffee.—All travellers agree in their account of the delicacy and delicious flavour of the coffee used in the East. It is prepared thus:—Pound thoroughly in a mortar some coffee berries that have been freshly and quickly roasted. Pass them through a fine sieve two or three times, until at last you have a brown flour. Mix two teaspoonfuls of this flour and a small piece of cinnamon with two cupfuls of water. Boil it gently, then draw it back for a moment, and repeat this several times, until a cream rises to the top; then add half a cupful more boiling water, and it is ready to serve. Neither sugar nor milk are required.

To clarify the decoction the Arabs wrap a wet cloth round the coffee pot, but this method only answers when pure coffee is used.

The Brazilians should know how to prepare the drink, too. Instead of keeping it or boiling it they pack the finely ground berries in a conical bag, and pour two draughts of boiling hot water through the mass. They say that makes a real cup of coffee.

In Brazil the host tenders to a visitor the cup of coffee, as in Japan and the East the cup of tea is offered. This coffee is ground and roasted on the spot every time it is served.

In France, where the consumption of coffee has more than doubled during the last forty years, and where it is steadily increasing, the practice is to pour half a cup of cold water into the coffee pot 10 minutes or so after the coffee has been made.

Success in coffee making is best ensured by getting good coffee, *fresh roasted, fresh ground, fresh made with fresh water fresh boiled*, and fresh served.

Spent Coffee Berries.—These are berries which, having been used whole for the manufacture of coffee extracts, are afterwards dressed up and slightly roasted a second time, which gives them a very dark colour; but upon being treated with ether, the extract obtainable from these spent berries is less than 1 per cent. of the weight of the berries, instead of 13 to 14 per cent. obtainable from genuine coffee.

Indeed, inferior coffee berries are often picked out and coloured to resemble those of better quality. Thus also green South American berries are dyed to resemble brown Java. Ground coffee is also sometimes adulterated with spent and re-dried coffee grounds.

It is illegal to put anything but chicory into coffee mixtures unless a halfpenny stamp be affixed on each quarter pound sold.

A COFFEE TABLE.

First cost of Raw Coffee per cwt in bond compared with net cost per lb. when duty paid and roasted, duty at 14/- per cwt. (*The cost of roasting is not reckoned.*)

Cost per cwt. in Bond.	Per lb. if 92 lb. return.	Per lb. if 96 lb. return.
41/0	-/7 3/16	-/6 7/8
42/6	-/7 3/8	-/7 1/16
44/6	-/7 5/8	-/7 6/16
46/6	-/7 7/8	-/7 9/16
48/6	-/8 3/16	-/7 13/16
50/6	-/8 7/16	-/8 1/16
52/6	-/8 11/16	-/8 5/16
55/0	-/9	-/8 8/8
57/0	-/9 1/4	-/8 7/8
59/0	-/9 1/2	-/9 1/8
61/0	-/9 3/4	-/9 3/8
63/0	-/10	-/9 5/8
64/6	-/10 1/4	-/9 13/16
66/6	-/10 1/2	-/10 1/16
68/6	-/10 3/4	-/10 5/16
70/0	-/11	-/10 1/2
72/0	-/11 5/16	-/10 3/4
74/0	-/11 9/16	-/11
76/0	-/11 13/16	-/11 1/4
78/0	1/0 1/16	-/11 1/2
80/0	1/0 3/8	-/11 3/4
82/0	1/0 5/8	1/0
84/0	1/0 7/8	1/0 1/4
86/0	1/1 1/8	1/0 1/2
88/0	1/1 3/8	1/0 3/4
90/0	1/1 5/8	1/1
92/0	1/1 15/16	1/1 1/4
93/6	1/2 1/16	1/1 7/16
95/6	1/2 5/16	1/1 11/16

Cost per cwt. in Bond.	Per lb. if 92 lb. return.	Per lb. if 96 lb. return.
97/0	1/2 1/8	1/1 7/8
99/0	1/2 3/16	1/2 1/8
100/6	1/2 15/16	1/2 5/16
102/6	1/3 3/16	1/2 9/16
104/6	1/3 7/16	1/2 13/16
106/6	1/3 11/16	1/3 1/16
108/6	1/4	1/3 5/16
110/6	1/4 1/4	1/3 9/16
112/6	1/4 3/8	1/3 13/16
114/6	1/4 7/16	1/4 1/16
116/0	1/5	1/4 1/4
118/0	1/5 1/4	1/4 1/2
120/0	1/5 1/2	1/4 7/16
122/0	1/5 3/4	1/5
123/6	1/5 15/16	1/5 3/16
125/6	1/6 3/16	1/5 7/16
127/6	1/6 7/16	1/5 11/16
129/6	1/6 11/16	1/5 15/16
131/0	1/6 15/16	1/6 1/8
133/0	1/7 3/16	1/6 5/8
135/0	1/7 7/16	1/6 5/8
137/0	1/7 11/16	1/6 7/8
138/6	1/7 7/8	1/7 1/16
140/6	1/8 3/16	1/7 5/16
142/6	1/8 7/16	1/7 9/16

Salvage Coffee.—Coffee which, salted and sodden with sea water, has been fished out of wrecked ships. It is then washed in lime water, coloured a rich brown with aniline dye, redried, and mixed with good coffee. Finally palmed off to unsuspecting retailers.

Gardner's Patent "Rapid" Sifter and Mixer. Freely used for coffees. Prices from 50s. to £100. Catalogues from Wm. Gardner & Sons, engineers, Gloucester.

Coffee Merchants.—John Cassell & Co. (importers and roasters), 80 Fenchurch Street, London; Jackson Bros. & Co., 14 St. Dunstan's Hill, London, E.C. Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool; Pilkington & Co., 89 Whitechapel, Liverpool.

Coffee Biscuits.—Very good ones are made of corn-flour, sifted sugar, and cream.

They are pricked all over and baked in a moderate oven.

Coffee-crushed Sugar.—A name for crushed sugar, in which the lumps are of convenient size in sweetening coffee and tea.

Coffee Essences and Extracts.—These are generally concentrated infusions of coffee made by percolation with water, and then evaporated to about one-third of its bulk; it is afterwards mixed to the consistence of treacle with chicory and burnt sugar colouring.

Example.—(1.) 1lb. of ground coffee, ½ lb. chicory, and ¼ lb. of caramel make a superior article, and by pouring boiling water on a teaspoonful of this a cup of very fair coffee is ready in a moment.

The essence should be kept in well-corked bottles and in a cool place.

(2.) It may also be made thus:—Smash a pound of sound fresh roasted coffee berries (mixed kinds and free from oil), and put, while hot, into a lidded jug along with nearly half a thimbleful of salt, add a quart of boiling water and close the lid, then place the jug in a large pan of boiling water, so that the jug be entirely surrounded (bottom and sides) by the boiling water. Keep the pan boiling half an hour, then remove the pan to the side of the fire so as to simmer about five hours, then strain the contents of the jug through muslin, pour into bottles or jars, cork well, and keep air-tight.

3. A good extract is also obtained by distilling one part of pure ground coffee with five parts of water, and keeping them at a temperature of 209° C., in a very close vessel, for ten minutes, and then evaporating it until reduced to one part.

(4.) Some makers add one part of rectified spirits to nineteen parts of concentrated infusion of ordinary coffee, and prescribe one or two teaspoonfuls to a cup of boiling water.

(5) Take a pound of freshly roasted and ground coffee, pour over it a pint of hot water in which 2 ozs. of glycerine have been stirred. Let it stand a couple of hours in a very warm oven and in a tightly-closed vessel. Then percolate the product with boiling water until it measures a gallon. Shake it well and bottle while hot.

Creole Coffee is a distilled preparation, made by putting the requisite quantity of ground coffee in a filtered coffee-pot, into which it is pressed compactly; a little boiling water is then poured on and allowed to filter through the coffee, when more boiling water is poured on, the process being repeated several times. The result is a very rich extract, which is often preserved in air-tight jars. A single teaspoonful yields a rich and creamy cup of coffee when desired.

Another Process.—Put 1 lb. of freshly-ground coffee into a large funnel and pour upon it three litres of boiling water. Collect the percolate and set aside; then pass more boiling water through the marc (or "grounds") until the whole percolate of five litres is obtained. Evaporate this second percolate on a water-bath down to half a litre, add the reserved portion, and leave on the water-bath for twenty minutes. To this extract add 10 per cent. of glycerine.

Coffee extracts are, however, said by the Paris School of Pharmacy to be less valuable than fresh infusions prepared extemporaneously, owing probably to the dissipation of aromatic properties; they also contain only about one-tenth of the quantity of caffeine found in the roasted grains themselves. Some so-called essences of coffee are declared to be simply treacle and burnt sugar, flavoured with coffee; but if properly prepared from coffee a good essence should contain 1 to 2 per cent. of crystallised caffeine.

Coffee may also be too highly concentrated or used too strong. At a recent meeting in Paris of the Société Medicale des Hopitaux, Dr. Gilles de la Tourette and other medical men of note spoke of numerous cases of *caffeisme*, or coffee poisoning, that had come within their experience, especially from drinking coffee black and excessively strong. It produces a form of dyspepsia very like that of excessive tea drinking, both of which are hardly to be distinguished from alcoholic gastritis.

For best selling brands apply to Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool.

Coffee Finings. — (See "*Black Jack.*")

Coffee Imitations and Substitutes. — Roasted bread or biscuits, roasted figs or dates, roasted chicory root, and scores of other things have been used as substitutes for coffee, and will yield brown fragrant beverages not altogether unlike that of genuine coffee, because produced by substances similar to those of coffee—burnt sugar, and other burnt gummy and starchy matters.

Some of these beverages not only quench thirst as well as coffee, but they also produce certain refreshing effects on the persons who drink them. The United States seem to distance all competitors in coffee substitutes.

They have *Acorn Coffee*, *Almond Coffee*, *Bean Coffee*, *Beech-mast Coffee*, *Beet-root Coffee*, *Canada peas Coffee*, *Coffee-pulp Coffee*, *Currant-seed Coffee*, *Corsican Coffee* (from the roasted seeds of the knee-holly), *Egyptian Coffee* (chick peas), *German Coffee* (chicory), *Gooseberry-seed Coffee*, *Holly-berry Coffee*, *Rice Coffee*, *Rye Coffee*, *Sassafras Coffee*, and many others.

American coffees frequently contain roasted rye and pea flour, mixed with bran and molasses, or refuse biscuits and the waste products of bakeries. *Crust coffee*, a drink somewhat resembling coffee in colour, is made by steeping in water browned or toasted crusts of bread.

Bogus coffee beans also are sold at about one-third the price of the genuine berry. The ingredients (molasses, chicory, rye flour, etc.) are well mixed by machinery, and the compound then rolled out into thin sheets. These are cut into long, narrow strips, about an inch wide, and then put through a sort of lozenge machine, which stamps out the beans with bewildering smartness. They fall into square sieves, in which they are dried in a room warmed to 130 degrees, and finally baked brown. The rough bean thus produced is afterwards

smoothed and polished by friction, and finally roasted. The characteristic membrane, called "Coffee-flights," is, however, entirely absent, and of course it is only the ignorant or careless who are deceived. Other spurious coffee beans were lately made out of rye flour, glucose, and water, in much the same way in Philadelphia and Trenton.

To the eye of an expert detection is easy, but small retailers and the public are often cheated.

Artificial coffee berries have also been made of chicory and glucose, but all these bogus productions are much heavier than the genuine berries.

Acorn Coffee, made from roasted and ground acorns, is well known on the Continent, and especially in Southern France, where a species of *Quercus* is the chief beverage among the peasantry. In some places Dangway beans and lupine seeds are utilised in producing spurious coffees.

Negro or *Mogdad Coffee*, also known as *Fodegoza* or *Café du Soudan*, first introduced in 1876, is an infusion made from the roasted seeds of *Cassia occidentalis*, grown on the River Gambia.

It can scarcely be distinguished from a genuine coffee beverage, and is used by whole communities in Africa and other parts of the tropics, and is said to be very valuable as a febrifuge, but now seldom met with in England.

Sacca, or *Sultan Coffee*, is made from the husks of the coffee berry. These husks are also used to some extent in real coffee, and are even said to improve its flavour.

Swedish Coffee.—The seeds of the *Astragalus Bœticus*, used as coffee and cultivated for the purpose in parts of Germany and Hungary.

Dandelion Coffee or *Taraxacum*, *Elephant* or *Victoria Coffee*, *French Coffee*, *Malt Coffee*, *Pelotas Coffee* or *Coffee Surrogate*, *Coffee-leaf Tea*, *Kola Coffee*, etc., are each referred to under their respective names.

Whey Coffee is a substitute consisting of whey evaporated to a thick paste and then rolled into cakes. It is afterwards broken up and mixed with coffee.

Mochara Coffee is simply made from ripe figs, roasted and pulverised, so as to be sold at about half the price of genuine coffee.

In Brazil and other South American countries the fruit of the wax palm, being very rich in *caffeine* and possessing nutritive properties, is sold as coffee. In New Zealand the berries of the *Coprosma* are used.

Celery Coffee is a compound which is, or lately was, made in Glasgow.

Date Coffee is referred to under its own heading.

The Regulations as to Imitation Coffees in this country are set forth in the following:—

GENERAL ORDER.

Inland Revenue Office, Somerset House, London, W.C.,
August 14th, 1882.

Ordered.—That notice be taken by the officers of this Revenue, and by every person who shall sell or prepare chicory or other articles, in imitation of, or for use as, coffee or chicory, of the following changes made in the law by the Customs and Inland Revenue Act, 1882, 45 and 46 Vict., cap. 41. The duties of Customs or Excise hitherto chargeable on vegetable substances, other than coffee or chicory, intended to be used as coffee or chicory, have been repealed. And in lieu thereof, an Excise duty of one halfpenny on every quarter of a pound is now chargeable on every article made in imitation of, or prepared for, the purpose of being used as coffee or chicory, and on all mixtures of coffee or chicory with such articles. This duty is to be paid by means of adhesive Excise labels, and such labels are deemed to be stamps within the provisions of the Stamp Duties Management Act of 1870 which imposes severe penalties upon any person who shall make or use any forged stamp, or shall deal in, hawk, or sell any stamps, without being duly licensed to do so. No article, substance, or mixture, as aforesaid, shall be sold or exposed for sale, or offered or kept readied for sale, or delivered out of the custody of, or possession of, any preparer, manufacturer, or importer thereof, except under the following conditions:—(

The article, substance, or mixture shall be placed in packets, each containing a quarter of a pound, or any number of quarters of pounds. (*b*) Each packet shall have affixed thereto a label or labels, which shall not have been before used, denoting the proper amount of duty payable according to the weight thereof. (*c*) Such label or labels shall be affixed so that the whole shall adhere to the packet, and so that the packet cannot be opened without tearing or destroying the label or labels. (*d*) When more than one label is affixed to any packet, they shall be so fixed that every label shall be wholly or partially visible. (*e*) Every packet containing, or purporting to contain, coffee with any other article or substance mixed therewith, shall have affixed thereto a label denoting in letters of not less size than the largest letters affixed to, or imprinted on, such label, the proper names of the several articles of which such mixture is composed. The label denoting the ingredients of the mixture must be provided by the trader himself.

Any person who shall sell, or expose for sale, or offer or keep ready for sale, or deliver out of his custody or possession any such article or mixture as aforesaid, otherwise than in conformity with the above conditions, shall forfeit the same, and incur a fine of £20. If any person who shall prepare, manufacture, sell, keep for sale, or import any article, or substance, or mixture, upon which the above-named Excise duty is imposed, shall buy, receive, or have in his possession any Excise label provided under the Act, which shall have been before used, or any portion of such a label, whether loose or affixed to a packet, he shall incur a penalty of £100, and such label or portion of a label shall be seized. In any proceedings for the recovery of the fine, proof that any label had not been before used shall lie upon the defendant. The Excise duty labels will be provided by the Commissioners of Inland Revenue, and will be supplied on application and payment of the duty, by the Comptroller of Stamps and Stores, Somerset House, London, and by Collectors of Inland Revenue in the country. The labels will be of two denominations, viz., one halfpenny and one penny each, and will be issued in sheets containing forty in each sheet. Wholesale coffee or chicory dealers, roasters of chicory or coffee, chicory dryers, and persons making any substitute for coffee or chicory, or mixtures therewith, must be furnished with a copy of this order, and officers must prepare schemes in the Store and General Register, in which they must enter the names of such traders, and the date of furnishing them with a copy of this order. It will be observed that the Customs and Excise duties on chicory, as imported, or as grown in the United Kingdom, remain as at present. Chicory dryers will, therefore, be liable to duty as hitherto, but such traders must understand that if any admixture of other articles occurs in the process of drying or roasting, they will not be entitled to sell such mixture without the required Excise duty label being affixed upon the package. Pure coffee or pure chicory may be sold without labels as hitherto; a mixture of coffee and chicory must, however, be labelled as required by the Adulteration of Food Acts, but no Excise label will be necessary.

By the Board,

CHARLES B. FORSEY.

Coffee-leaf Tea. — A refreshing and restorative infusion prepared in Java, Sumatra, and other parts of the Eastern Archipelago from the roasted leaves of the ordinary coffee plant (*Coffea Arabica*).

The leaves contain the same stimulating principle as the coffee berry—*caffeine* or *Theine*. Before infusion they somewhat resemble true tea leaves (*Camellia thea*), but afterwards they are easily distinguished, lacking as they do the serrated or notched edges of the ordinary tea leaf. They also possess besides the alkaloid a full berry-like flavour and very little of tannin. In fact, when prepared, coffee-leaf tea closely resembles the seed beverage in many points, but is somewhat pungent and bitter, and, although the natives seem to prefer the liquor from the leaves to that prepared from the ground

beans, it has an unpleasant senna-like odour.

These roasted leaves are sold in Sumatra at about 1½ per lb., and used by some millions of people, but only a few packages—"half-chests" from Ceylon—have reached our own markets, and these have so far been allowed to pass *duty free*.

Cognac. — (See also *Brandy*) — A celebrated kind of brandy made at the town of Cognac, and in the Departments of Charente and Charente Inferieure, France, and properly is the distilment obtained from white wines, especially from the grape known as *Folle blanche*, which only yields a poor quality of fruit, not much larger than ordinary currants. In good years this wine will produce a fifth of spirit at 22° to 23°, but in bad years nine or ten parts of wine are required to produce one of Cognac.

The best produce of the still is known as *Eau de Vie Première*, and is remarkable for its delicate rich bouquet and flavour, rendering it pre-eminent above all other makes of brandy. It is said to owe much of its excellence to the care exercised in fermenting the wine, that it be not impregnated with an acrid oil which is present in the skin of the grape, a drop of which oil would suffice to deteriorate a large quantity of good brandy.

But it is a well-known fact that not nearly so much real Cognac is made in the Charente districts as would supply the demand, and that comparatively little of the so-called Cognac is genuine. In fact seven-eighths of the spirit exported from France under the name of *Cognac* is made in other districts, while some are adulterated compounds known there as *façon Cognac* (imitation Cognac). These latter generally contain some 40 per cent. of alcohol obtained from grain, beet-root, or potatoes (*Berlin spirit*), and 40 per cent. of other substances which are used to make it like real Cognac. Indeed, analysts have shown that there is no reliable means of distinguishing real Cognac distilled from wine from the spurious stuff. Some are made up from potato-spirit, water, "essence of Cognac," and a little tincture of vanilla.

The word "Cognac" is, however, only legitimately applied to French brandy which has been distilled from wine, wherever made, and the French Courts have ruled that the word need not be confined to the *eaux de vie* of Charente or any other particular district; although this ruling is curiously inconsistent with the law as to "Champagne," which word must only be applied to wine grown in the Champagne district.

The old reputation of French brandy is now altogether demoralised, and both dealers and the public generally were strongly advised by the Health Congress (1899) to change on to the Spanish brandy, which is more reliable.

Cohune Oil.— Obtained from the nut of a kind of resinous palm tree. It is considered superior to cocoanut oil; and in British Honduras, where there are some two million acres covered with these graceful trees, the oil is largely used for domestic and cooking purposes in the families of the numerous mahogany and logwood cutters.

Coker, Koker, or Cocoa Nuts. —Du. *Kokosnooten*; F. *Noix de Coco*; Ger. *Kokosnooten*; It. *Noce di Coco*; Port. *Cocos*; Rus. *Kokos*; Sp. *Nuez de Coco*. (See also *Pigmy Nuts*.) Also known as *Coco de Mer*, and *Monkey Nuts*, but must not be confounded with the nuts, beans, or seeds of *Theobroma cocoa*, used for making chocolates and drinking cocoas.

"Coco" would, after all, be the right spelling for these nuts, because "coco" is the Portuguese word for monkey, and the end of the nut strongly resembles a monkey's head. They are the fruit of a species of palm tree, *Cocos nucifera*, which grows 50 to 90 feet high in nearly all of the tropical climes, but perhaps most extensively about Nassau and Jamaica in the West Indies, and in Samoa. It requires plenty of hot sunshine and open air, and seems to prefer a low, sandy shore, where the roots can strike

into sea-water, while the top always leans sea-wards, so that the ripe fruit often falls into the sea, to be carried in its wooden case by the waves till it plants and propagates itself on some other distant shore. Some recent travellers deny that the trees grow wild in this way, and aver that they require very careful planting.

The tree has no branches, but is crowned with a bunch of sword-like leaves, each leaf being 12 to 14 feet in length, and having a very strong mid-rib. A tree yields annually about 100 nuts, arranged in clusters of about a dozen each near the top, and bears for some 150 years. It is the most widely-distributed of all tropical growths, and it is questionable whether there is any species of tree so useful. Residents in temperate zones have little idea of its immense importance in tropical countries. An Indian with a garden containing twelve of these coker-nut trees and a couple of jack trees, *Artocarpus integrifolia*, considers himself a comparatively independent gentleman.

A few years ago the Dutch Government ordered a census of the coker-nut trees in Java and Madeira, which footed up to over twenty millions—being an average of three to every native inhabitant.

One species (*Lodoicea*), cultivated in the Seychelles, produces double nuts.

Coker-nut culture in Florida is on the increase. There are about 250,000 palms of all ages on the east coast, most of which are bearing. Growers bury the nuts until they sprout, and then plant them in holes about two feet deep. The tree begins to fruit in from five to seven years. There are trees at Key West fifty years old. On the shores of Lake Worth there are over 50,000 trees, old and young.

The outer husks of the nut are very rough, and it would be no easy task for a novice to open a dozen or two. They are usually stripped off by men using two fine-pointed steel chisels, and who, by constant practice, are able to open 10 to 12 hundred nuts per day. The husks are very useful, being steeped in water the dry dusty substance mixed with the fibres is separated, and the fibre is spun into a valuable species of yarn, known as coir, which is used very extensively in making "sennet" or braided twine, ropes, cordage, bagging, hammocks, breech cloths, hats, matting, coarse brushes, towels, bed covers, and stuffing for mattresses and cushions. Sometimes these outer husks, split in two, are used as scrubbers for floors, or are carved into masks and similar grotesque figures; even if burnt, the ashes supply an alkali for making soap. The outer husk of a coker-nut, sawn in two across the grain of the fibre, forms an excellent wood polisher.

The inner shells, when emptied of their pulp and liquor, form drinking cups, water bowls, or "hubble-bubbles," as they are called in India, carved vases, sugar basins, tea-pots, spoons, and other domestic utensils.

The juice of the unexpanded flowers makes "Tari" or "toddy" for the natives; boiled down, it yields honey and sugar; and fermented, it yields a spirit, and passes under the name of *arrack*, etc., and this is used extensively by bakers in India instead of yeast; or, if allowed to undergo the acetous fermentation as vinegar, and boiled down while fresh, with a little lime, the juice yields *Jaggery*. It is this milk or creamy substance that solidifies and afterwards forms the white pulp. In a fresh state, the pulp is either eaten raw or dried hard and cured in the sun for exportation, the latter being known here as *Copra* and in Ceylon as *Copperah* (which see). Coker-nut pulp is also grated and used for soup, or *potage au coco*. It also yields Coker-nut oil or butter, while large quantities are now sweetened and dried for use in confectionery, cakes, biscuits, etc. (See *Desiccated Coker-Nut*.)

In the younger nuts there is a delicious jelly, clear, like albumen in an egg, which has a very beneficial effect when taken by persons suffering from fever and other ailments. Even the juice of young and green nuts, instead of being sour, is very delicious and wholesome,

clear as water, cold, and sparkling, also just sweet enough to be agreeable, besides being remarkably refreshing and fattening. The young buds taste very like cabbage when boiled. The bark of the tree is used by the natives in erecting their dwellings, its leaves as roofing material, boat oars, fans, etc., and the leaf-stalk as a gauze for windows. It is also used for making lanterns, masks for screening the face from the sun, wickerwork baskets, and as writing material, sail-cloth, torches, brooms, ropes, matting, etc. The cocoa-nut palm tree, very porous and spongy in its green state, also yields "porcupine wood," excellent for building and for furniture: and when thoroughly seasoned will endure for a long time underground, and, therefore, is very suitable for posts.

If the body of the tree be bored there exudes from the wound a white liquor, called *Palm Wine*—very sweet when fresh and kept a few hours it becomes still more poignant and agreeable; but in twenty-four hours it changes into vinegar. In fact, a home and its furniture, food, drink, and heat, clothing, boats, and weapons, may all be derived from this one tree, the ever present friend of the tropical native.

The nuts with the outer husk on are imported from West Indies, Ceylon, Africa, etc., loose, but if without the outer husk, they are generally imported in bags containing 75 to 150, according to the size of the nuts.

The cocoanut industry in Zanzibar stands well with the European markets, and seems to have an assured future. In the annual report of the Agricultural Department it is pointed out that the Dunga trees yield about 30 nuts per year, and the Machui, which are older, 40 nuts. Gathering costs about four rupees per thousand nuts, and the nuts can be sold on the spot for from 20 to 22 rupees per thousand; there is, therefore, a profit of, say, 17 rupees per thousand. Now, a thousand nuts are the product of 33 trees, at 30 nuts per tree. Trees are planted 35 feet apart, which is 35 trees to the acre. Roughly, it may be taken that 1,000 nuts are the produce of an acre of land, and give a net return of 17 rupees (£1 2s. 8d.) per acre, or half a rupee per tree. There are no other outgoings to be charged to cocoanuts, as the trees are not cultivated in Zanzibar. Mr. Last has more than trebled the yield of his trees at Mangapwani, which he attributes to having dug the ground round them. It is found at Dunga that digging and mulching with grass can be done for about three pice per tree; the margin of profit, therefore, as shown by Mr. Last's figures, is considerable.

For some time before Whit-Monday a certain district of Houndsditch, in London, always teams with costers buying their cocoanuts for the holiday season. This period of activity lasts for two weeks, culminating in a Whit-Sunday sale, which starts in the early morning and lasts till two or three in the afternoon. The nuts are brought from Trinidad and Colombo in sailing vessels of about 400 tons, each vessel carrying about 500,000 nuts. Their cargoes are usually discharged in the Regent's Canal Basin, Limehouse, where from 8,000,000 to 10,000,000 nuts are received every year. Up to recently every cocoanut which arrived in London had to be husked, but now Costa Rica sends a large quantity already husked off with the exception of a little piece fitting over the "eyes," which is left in order to keep the nut sweet. After the husking, which is effected by a man working with two chisel-like tools, one in each hand, and costs 6d. per hundred, the nuts pass to the sorter, and by him are divided into the following different classes, a bin for each being reserved:—"Large milky," "middles," "smalls," "milky growers," and "chats." The first three grades indicate good nuts of different sizes; "growers" are those which are "sprahtin', fairly sprahtin'," like the moustache in the song; whil-

"chats" are a very small and thin variety. The sorter also separates the good nuts from the bad by subjecting every one to the test of being pressed against some hard surface, when, if the "eye" bulges, it is what is known as "weak-eyed," and only fit for oil or soapmaking. The prices realised per hundred are:—Large, 14s; middles, 12s.; smalls, 10s.; growers and chats, 5s. But the coster prefers unsorted lots of Ceylon nuts in bags of matting containing any number from 75 to 100, for which he pays about 5s. per bag. The cocoanut-shy man generally buys wholesale, the patriarch of the family investing in, say, 5,000 or 6,000 nuts, and dividing them among his relations.

Small lots are commonly sold by the dozen. The "milky," *i.e.*, the sound and fresh ones, fetch the best price, while "dry," *i.e.*, old or damaged nuts, are sold much cheaper.

The sweetest in flavour and best for confectioners, biscuit makers, and others, are those from Trinidad, though Ceylon runs them very close in quality. Apply to J. Agate, importer, 25 Wellington Street, Covent Garden, London, W.C.

Cokos.—See *Temperance Drinks.*

Cola Nuts. — See *Kola Nuts.*

Cold Cream. — A cooling unguent for the skin, usually made of almond oil, spermaceti, white wax, and rose water. Mix:—12·5 gm. spermaceti, 10 gm. Japan wax, 62 c.c. almond oil, 19 c.c. rose water (strong), and 0·5 gm. borax.

Cold Water Soaps. — This term was originally confined to soaps made from very soft fatty materials, but containing very little water; then similar products were largely made by artificially depriving "neat soap," fitted in the ordinary way, of about one-third of its 30 per cent. of water, by exposing it to prolonged fire-heat. These soaps may be kept indefinitely without losing weight, and are truly economical, provided they are not used with hot water. Latterly, however, the term cold water soap has been extended to heavily watered makes which run away quickly, espcially in hot water. Hence buyers should be careful what kind of soaps they get under this name. "*Health Soap*" is a good example of what a Cold Water Soap should be.

Collared Meats.—*Collared Beef* is that from which the bones have been removed. It is afterwards rolled or bound with string or tape, and braized with various preparations of herbs, spices, wine, etc., and finally pressed under heavy weights.

Collared Head put up in tins is becoming very popular through housekeepers being able to re-melt the contents and put in their own fancy moulds.

Collared Brawn is described under *Brawn.*

Collis Browne's Chlorodyne. —An ounce bottle contains as the important ingredients 6 grains of hydrochlorate of morphia, 6 drams of chloroform, and a small quantity of Indian hemp. (*Hygiene*, May 27th, 1893.)

Colonel Skinner's Chutney.—(See also *Chutneys.*) This is a highly esteemed variety of Anglo-Indian pickle, in which the fruits are cut in large slices, moderately sweet, but pretty hot. The genuine is made at Bombay.

Colophony, a name for *Resin.*

Colours for Foods, Drinks, etc. —F., *Couleurs inoffensives;* G., *Giftfreie Farben;* It., *Colori inoffensivi;* Sp., *Colores inoffensivas;* Port., *Cores.*

These substances, whether in powder, paste, or liquid form should always be harmless, and all persons engaged in preparing or vending articles of food, drinks, etc., should ever beware of poisonous or injurious colourings.

Sugar-boilers, pastrycooks, and others using colours should bear in mind that it is perfectly feasible to colour confectionery in most brilliant tints without having recourse to any

deleterious dyes. The old "caramellists," or confectioners to the princes and prelates of the 18th century, knew these things well, and equally familiar with them were the abbesses of the convents renowned for their "compotes" and "conserves."

In strawberry, raspberry, and plum ices the fruit itself gives not only the desired hue, but flavour as well, and the red can easily be heightened by the addition of crushed currants.

Yellow.—Although sugar coloured by the addition of aniline dyes is often sold to confectioners as "egg colouring," etc., no better yellow can be found than that afforded by hay saffron (or safflowers) which is a most salubrious drug, and which the wise Italians always add to their *risotto*, not only to make it look pretty, but to make it wholesome. Persian or French "yellow-berries," *Rhamnus infectorius*, are also quite harmless vegetable products, and either extracted with alcohol or treated with alum or cream of tartar yield a very bright yellow.

Turmeric root, dried and ground to powder, is a quite legitimate and effective yellow, suited for many uses, while *Logwood chips*, from Yucatan, produce, with a little acid, a very suitable yellow for use in sugar boiling.

Green.—(1) Extract of saffron 1·20, with solution of indigo. The colour is improved by a few drops of chloroform; or (2) tincture of saffron, with solution of indigo carmine mixed, with an equal volume of glycerine. (3) Chlorophyll in alcoholic solution. (4) Spinach juice.

A most vivid *green* can be obtained from spinach water or finely chopped and decocted parsley, and it is the last-named vegetable which gives the emerald green colour to the famous *Sauce verte* of the Restaurant Lucas at Paris.

Sap green is also serviceable for many purposes. For *blue* the best ultramarine, indigo, Prussian blue, or smalts are good; and for *violet* litmus supplies a ready tinge.

Red.—Mix 6 parts of cochineal with 2 parts of chalk and rub well together, then add gradually 12 parts of 95 per cent. alcohol, and finally 15 parts of water; set aside for a time and then filter. Or dissolve 2 parts of carmine in 12 parts of potash solution, and dilute with 86 parts of water.

A *pink* tint, likewise, red, scarlet, or crimson, can be obtained from *cochineal*, but no confectioner in his senses would think of using red lead for crimson or even gamboge for yellow, the last being hot and nauseous to the taste, besides being purgative, although it has often been used for imparting a primrose or light straw tint in lozenges and other confections.

There are two well-marked classes of red pigment in the vegetable kingdom—the wine-red, which occurs in *Ampelopsis*, *Rhastyphina*, *Comus sanguinea*, etc., and the carrot-red, in the beet, *Amaranthus*, fruit of *Phytolacca*, etc.

The mallow violets, as in *Coleus*, etc., form another group.

In black grapes and in whortleberries there are two pigments, one of which is a glucoside; the colouring matter of yellow vine leaves is a glucoside, as is also that of the mallow.

Chrome yellow (chromate of lead) was formerly largely employed for colouring sweets, and even pastry, and it is still used by some people; but it is classed as "an adulterant," and should be discarded.

Yolkine is a fancy name given to an aniline yellow.

Caramel, or burnt sugar colouring, is a very useful and perfectly harmless substance, and so are most of the compounds made up at the special laboratories for essences, extracts, and vegetable colours.

The use of aniline, or tar colours, in foods, etc., is prohibited, and have been shown by the Government analysts to be very injurious when imperfectly prepared. If discovered, the

user is liable to severe penalties under the "Adulteration Act," 35 and 36 Vic., chap. 74. Still it is pretty certain these bright and powerful dyes are often employed in paste, powder, or liquid form by many confectioners and cheap jam manufacturers, and when pure have not been proved to be injurious.

Gardner's patent "Rapid" sifter and mixer, freely used for above. Prices from 50s. to £100. Catalogues from Wm. Gardner & Sons, engineers, Gloucester.

Colours for Paints, etc. — F., *Couleurs;* G., *Farben;* Sp., *Colores.* (See also *Paints.*)

Most of these are dealt with under their respective names.

Every quarter of the globe is ransacked for the materials—animal, vegetable, and mineral—employed in the manufacture of the colours one finds in a paint box, and the old countries of the world are still resorted to. From the cochineal insects are obtained the gorgeous carmines, as well as the crimson, scarlet, and purple lakes. Sepia is the inky fluid discharged by the cuttle-fish, to render the water opaque for its own concealment when attacked. Ivory-black and bone-black are made out of ivory chips. The exquisite Prussian blue is got by fusing horses' hoofs and other refuse animal matter with impure potassium carbonate; it was discovered by an accident. In the vegetable kingdom are included the lakes, derived from roots, barks, and gums. Blue-black is from the charcoal of the vine-stalk. Lamp-black is soot from certain resinous substances. From the madder plant, which grows in Hindustan, is manufactured Turkey red. Gamboge comes from the yellow sap of a tree, which the natives of Siam catch in cocoanut shells. Raw sienna is the natural earth from the neighbourhood of Sienna, Italy. When burned it is burned sienna. Raw umber is an earth from Umbria, and is also burned. To these vegetable pigments may probably be added India-ink, which is said to be made from burned camphor, but the ingredients are not always the same; an inferior quality consists of lamp-black and size or animal glue. The Chinese, who alone can produce the genuine, will not reveal the secret of its composition; they do not use animal glue, but vegetable juices, which render it more brilliant and lasting. Mastic, the base of the varnish so called, is from the gum of the mastic tree, indigenous to the Grecian Archipelago. Bistre is the soot of wood ashes. Of real ultramarine but little is found in the market. It is obtained from the precious lapis lazuli, and commands a fabulous price. Chinese white is zinc. Scarlet is iodide of mercury; and cinnabar, or native vermilion, is from quicksilver ore.

Apply to C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Wm. Gardner & Sons, engineers, Gloucester, make machines specially suitable for treating above. Catalogues free.

Coltsfoot Preparations. — These are numerous, taking the form of liquids and solids, lozenges, rocks, pipes, tobaccos, etc.

Coltsfoot itself, *Tussilago farfara*, or *Ungula Caballina*, has many *aliases*, among which are cough-wort, asses-foot, foals-foot, horse-hoof, bulls-foot, etc., and is a very common plant in waste places, clay banks, and brick-fields, which it often brightens up with its yellow flowers.

The downy substance on the undersides of its leaves used to be, in the old days of flint and steel, dipped in a solution of saltpetre, dried, and used as tinder. The leaves and roots have long been credited with possessing great virtues for coughs, colds, wheezing, shortness of breath, and rheumatic affections. The prepared leaves are also largely used in *British Herb Tobacco*, and have been recommended to be smoked in cases of asthma and difficult breathing.

Coltsfoot Rock may be made as fol-

lows:—Soak 3 ozs. of gum tragacanth in water till soft, pass through a sieve, then add 1 quart of gum arabic water (strong), 2 to 2½lbs. of liquorice paste, dissolved, ¼ oz. of oil of anise, and a strong flavouring of lemon. Work enough sugar with this to form a stiff paste, then pass through the forcer, same as used by bakers for jumbles, using a star plate; when through the forcer cut in lengths and dry.

It is usual in large factories to utilise all sugar waste from the lozenge and pan rooms in the manufacture of coltsfoot rock. The waste is thoroughly dried in a warm stove, then ground in a sugar mill, and passed through a fine hair sieve. A cwt. of the rock may be made from 100lbs. ground sugar waste, 2lbs. gelatine, 3 qts. liquid gum, 2 qts. boiling water, 1lb. extract of liquorice, with a little coltsfoot flavouring and brown colouring.

Coltsfoot Lozenges are made from the same paste.

Acidulated Coltsfoot is made by the simple addition of ¼ oz. tartaric acid to each pound of sugar used.

Colza Oil. — Ger., *Rueboel, Cazaoel;* F., *Huile de Colza;* It., *Oli di Colza;* Sp., *Aceite de Colsa.*

The oil expressed from rape seed—a species of cabbage, *Brassica oleracea.* A large quantity is grown in Roumania, particularly about Ilfor, Botoshany, Teleorman, and Jalomitza. The oil is used for burning in lamps and many other purposes.

This article being frequently met with in very inferior condition, it may be explained that the seed itself should be pure and clean before the oil is extracted, and the latter should then be freed of all albumen, mucous and other fluids, or the oil will not burn well. The name of colza is also applied to a mineral oil of commerce. Colza seed is also grown in France, and the French refined oil is conveniently put up and sold in gallon tins.

Colza seed, especially that from Germany, is often adulterated with "*Sauve*" (grains of a variety of mustard), and also with *Brassica juncea*, both being artificially coloured blue, with a coating of a kind of litmus.

To detect the fraud maceration in water is sufficient, a blue solution being thus afforded, which gives with acids a rose coloration, the original tint being restored by alkali. These coloured seeds yield from 10 to 15 per cent. less oil, and are far below the market value of genuine colza seeds.

Apply to C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Comestibles.—A popular French term for victuals, provisions, eatables, etc., particularly those luxuries sold by grocers for human alimentation.

Comestible Oils.—See *Edible Oils.*

Commanderia Wine.—A sort of sherry, very popular in Cyprus.

Comfits.—F., *Petites dragées* (also known as *Scotch Carvie, Carvie Comfits, Hundreds and Thousands*, etc.).

These minute confections are usually made in revolving vacuum pans heated by steam. A few carraway, anise, or other small seeds, after being well cleaned and dried, are thrown into the pan, and upon these is carefully dribbled a little syrup of white sugar, which dries upon and coats each seed. By further additions these coated seeds not only increase in size, but retain their original shape. In this way the minute globules known as hundreds and thousands are made. If the goods are required to be white pure sugar is employed to pour into the pans. But suitable colours—such as pink, blue, green, brown, silvery grey, etc.—and essences can be added to the sugar as required. If these minute globules were allowed to remain for a longer time, new material being constantly added, they would gradually increase in size to the diameter of large marbles. The shape of the comfit is determined by the shape of the centre. For instance, if almonds are put in the pan the re-

sulting goods are almond shaped, the nut forming the interior. In this way a variety of shapes are obtained, but all more or less rounded owing to the rotatory movements of the pans.

The goods, when finished, are dried, sorted, and are then ready for glazing. The latter is accomplished by placing the sweets in a cold revolving pan containing the glazing material. (See *Dragées.*)

Composite Candles. — A name given to mould candles when made of tallow, from which the greasiness or oleic acid has been extracted, and the stearic and palmatic acids only remain, forming a hard crystalline composition.

These were first introduced in 1840 by Price's Candle Company, for the purpose of the general illumination on the occasion of Queen Victoria's marriage, and as a cheap candle which should require no snuffing, and were made from a mixture of stearic acid and cocoanut stearine.

Compote.— A French name for stewed fruits or vegetables, etc. A ragout of pigeons or small birds, also fruits dressed with a demiglaze of sugar, as *Compote de Fruits* (stewed fruit), *Compote de Pigeons* (stewed pigeons).

Compounds are admixtures, the term "compound" being often used instead of "adulteration," as with mustard, etc. Great care is necessary not to supply compounds when the article itself, as "mustard" simply, is asked for.

Compressed Flowers.—Tablets of pure sugar flavoured with various perfumes are sold under this name. (See also *Preserved Flowers.*)

Compressed Julienne. — See *Julienne.*

Compressed Tea. — See *Brick, Tile, Puèrh,* and *Tablet Teas.*

Compressed Vegetables.— Vegetables have for ages been known to be an indispensable food for humanity.

In the days of the Pharaohs in Egypt, it was customary to gather vegetables and preserve them, by drying them either in the sun or in ovens, and that simple custom prevailed with little alteration down to 1846.

In that year a Monsieur Masson, head gardener to Louis Philippe, King of the French, invented a process by which vegetables, herbs, and fruits could be dried by hot air in such a way as to retain all their flavour and good properties for several years, and yet occupy only one-eighth of their original bulk. It was not, however, till 1854-5, the date of the Crimean War, when thousands of British and French soldiers and sailors died of dreadful diseases through lack of vegetable food, that the full value of M. Masson's invention was realised.

The allied Governments of France and England at once ordered vast quantities of these dried vegetables to be prepared and shipped for the troops, but the great bulk necessary for so many thousands of men would have made it very difficult to execute this order had not Mr. Chollet, in conjunction with M. Masson, invented a mode of compressing the dried vegetables into cakes or slabs of such small size that they actually succeeded in compressing sufficient vegetables for one ration for 40,000 men into the space of one cubic yard!

Since that memorable time Messrs. C. Prevet & Co. (successors to Messrs. Chollet & Co.) have introduced many improvements into the manufacture of these Dried and Compressed Vegetables. They have been largely used in all campaigns all over the world, down to the late Nile, Soudan, Burmah, and Chin-Lushai expeditions, and our Board of Trade have (by Circular 696 A) enjoined that all sea-going vessels carry *Chollet's Compressed Vegetables*, as a medical necessary and a preventive of scurvy. In fact, they seem to be an indispensable article of provision at sea, on the march, in the camp, and in the bush. All Arctic expeditions have used them, and they are specially suitable for boating, sporting, and survey parties.

The actual proportions and kinds of vegetables employed by Messrs. Prevet are, of course, trade secrets, but they are only gathered in the autumn when in

their prime; first carefully sorted and washed, peeled, and cut into strips by machinery. Next they are slightly steamed and dried in iron cupboards by currents of hot air, each kind of vegetable separately, so as to fix the saccharine and albuminous properties and prevent the waste of essential oil. Afterwards the vegetables and herbs are mixed in the proper proportions, and compressed by powerful hydraulic machines into slabs, about ¾ inch thick, and same time divided by grooves into five-ratio squares or cakes. These squares are then wrapped in paper and sealed up in air-tight tins, the lids of which bear the date of manufacture embossed from the inside.

Vegetables, fruits, and herbs are also prepared and put up separately without being pressed into cakes. There is a great demand for special kinds, as, for instance — in Africa, for *celery*, as a cure, when stewed, for rheumatism caused by sleeping on the open veldt; in India, for *onions* to make a soup, considered a sovereign antidote for over indulgence in spirituous liquors; also in the Hudson Bay Territory for warming the stomach; while in Burmah, compressed apples and pears are mainly sought after.

Several other manufacturers have from time to time endeavoured to compete with Messrs. Prevet, but at all the International Exhibitions since 1851, this firm have been awarded first prize medals.

Their London Depôt is at 134 Fenchurch Street, E.C., and their proudest title is that bestowed on them by British bluejackets and soldiers after the Soudan War—"Jack and Tommy's Friends."

Comptie. — An American name for the bread-root of the Indians, a species of cassava, and grows well in Florida.

Conatto.— A rich liqueur imported from Australia. It seems to have the flavour of curacao and rum shrub combined.

Condensed Milk. —F. *Lait Condensé.* (Also known as *Preserved Milk, Swiss Milk*, etc.)

Condensed Milk is milk boiled down or evaporated in closed or vacuum pans until more or less of the water goes off in the form of steam, large air-pumps being also generally used to pump the air out of the covered pans in which it is boiled, and thus it is made very quickly, so that within twelve hours of being drawn from the cow it is usually condensed, cooled, and ready for tinning. There are many qualities; in some cases very little water is taken away, in others all or part of the cream is skimmed off, or otherwise extracted from the milk before it is boiled. The best is made from pure new milk, with all its cream as drawn from the cow.

It is first refrigerated, then boiled or evaporated to about one-sixth its original bulk, either with or without the addition of a little refined cane sugar, and is finally cooled and put into tins and hermetically sealed, when it will keep good for a long time.

When wanted for use the tin may be opened, the contents again diluted with five or six parts of water, and it thus becomes normal milk again, the sweetened kinds being, of course, milk with sugar, but with all the nutritive elements originally contained in the fresh milk, and in an unchanged condition.

As already stated, it may be prepared either with sugar or without; but if required for long keeping 40 to 60 per cent. of sugar is added, whereas the unsweetened will only keep good for a week or ten days, and only a few hours when opened.

The latter, however, is often preferred, and if mixed with three or four times its bulk of water, and set in shallow dishes for ten or twelve hours, a cream will rise, which, if churned at a temperature of 70° F., will produce butter, thus showing clearly that the butter globules are retained and unbroken.

Its history.—M. Appert was the first to recommend that milk should be boiled down to about *one-half* its volume before putting it into bottles, and in 1846 Bekaert tried to improve the process by adding carbonate of soda to the milk, but it is said the credit of first condensing, or rather concentrating, milk to about *one-sixth* its bulk is due to a Frenchman named Martin De Leignac, about 1847, from whom the process was

obtained soon afterwards by Mr. E. D. Moore, a doctor attached to the English Court, and who had manufactories in Staffordshire and Middlesex, making concentrated milk, and also a combination of cocoa and milk.

In 1857 Mr. Moore retired from the business, which, however, was taken up by his manager, Mr. House, and on an "improved patent," and has been carried on mostly in the shipping trade.

In was from Mr. House (through a Captain Fletcher) that Mr. Gail Borden, of White Plains, New York, the great milk condenser in America, got the idea; with this difference, that Mr. House's "concentrated" milk was got by evaporation of the water in *open pans*, and Mr. Borden's by evaporation in *closed "vacuum" pans*. Borden's product was put on the American market about the year 1860; but it was not till 1867 that condensed milk, as we now know it, was introduced to the British public.

This latter process, with perhaps some improvement on it, was (in 1866) adopted by some American gentlemen, who established the Anglo-Swiss Company, at Cham, in the Canton of Zug, Switzerland. The Aylesbury Company (established 1870) was an offshoot, or rather secession, from the Anglo-Swiss.

Preserved or *desiccated milk*, in the form of *a white powder*, was, however, prepared (for ship's use and export) both in England and on the Continent for many years previously; but that process broke the butter globules, and seriously changed the character of the milk. It could only be dissolved in warm water, and went out of use soon after the "condensed" article came into competition.

Fresh cow's milk is probably preferable to any preserved milks, but the convenience of the condensed article to travellers, voyagers, and sailors is very great. Other advantages are it is pure and of uniform quality; being condensed near where it is produced, it receives no injury in transportation; it does not change, but keeps good any length of time; special care is necessarily taken at the factories to obtain fresh milk from the farmers, not only of good quality, but in good condition; it cannot be tampered with after preparation and the tins hermetically sealed; and it is convenient and always at hand at any hour of the day or night.

The larger milk factories receive the produce of 2,000 to 3,000 cows daily, hence they are established in those grazing centres where a plentiful supply of the fresh fluid can be depended upon, and at a low contract price—say 4d. to 8d. a gallon; or, if by weight, so much per 100lbs.

Some of the leading companies employ their own inspectors, and will not take milk from a farmer who feeds his cows on ensilage, turnips, brewers' grains, or on cabbage; neither will they take any milk within sixty days of cow calving, nor within six days after calving.

It should be mentioned that the greatest cleanliness is observed throughout the whole process. Even the milk tins which the farmers deliver, immediately on their being emptied, are, in the receiving room, placed in warm water and scrubbed inside with brushes. A strong jet of steam is then turned into them, searching every chink and cranny; and, finally, another very powerful jet of cold water completes the cleansing process, which is also applied continually to all cylinders and receptacles used in the factory.

The milk received from the farmers is tested in a variety of ways several times in the week; and some is stood in pans to test the rise of cream, a record of which is carefully kept. The contracts with the farmers are very stringent, and if anything is found wrong with the milk the company reserve to themselves the right of returning it, and at once throwing up the contract.

They are careful also to examine the police records of the district, to see if any of the farmers whose milk they

take have any cases of diseased cattle on their farms, which they are bound by Act of Parliament, under heavy penalties, to report at once to the police.

The sugar used is of the best refined kind, some also from beetroot, and we need hardly observe that no adulteration takes place at any part of the process; it would be impossible, and, if attempted, would at once defeat the great object—namely, the preservation of the milk. Thus we have an article which is pure milk—not an article made from milk—with the addition of sugar, all that is taken from the milk being the water, which, in milk direct from the cow, constitutes as much as 80 parts out of 100. Astounding as this statement may seem, there is no doubt about it, and the stream of colourless water which runs freely and continuously from the condensers gives ocular evidence of it; and its being almost tasteless further shows that by the process the milk loses nothing but its water, and this it does to the extent of about 55 parts out of the 80—leaving in the condensed milk from 20 to 25 parts of water, the rest being the caseine, butturous, or fat, and other solid substances which remain intact. This is proved by the fact that when the proper quantity of water is again added to the condensed milk, it will, at a certain temperature, churn into butter.

Danish Tinned Milk.—It has long been the aim of scientific effort to produce condensed milk which in taste, smell, nutritive value, and easy digestive qualities would replace fresh milk. By a simple and ingenious process, carried out by Mr. Fjelstrup, the Danish milk is condensed at a low temperature in such a manner that its chemical composition is unaltered, and at the same time all bacteria are destroyed. This condensed milk is without any addition of sugar or other foreign substance, prepared from the best milk, obtained from cows under the constant inspection of veterinary surgeons to guard against the transfer of contagious diseases of which milk may often be the bearer. Condensed to about one-third of the original volume, it may in this state serve the purpose of ordinary cream, and mixed with two parts of water to one of condensed milk replace the original pure milk. The principal object is, however, to provide an article of export, packed in hermetically closed tins, that durability may be secured for an indefinite length of time, and for use in tropical climates where there is no opportunity of securing fresh milk, and this object has been fully achieved. The milk having undergone the necessary process in the condensing vats is tapped by the method patented by the factory, into sterilised tins, which are closed air-tight, as they run full, one by one, and then soldered immediately. These tins are placed in rows on shelves, where they remain for some time under close observation, until they are packed for exportation in cases containing four dozen each. The tins are fitted with tubes, the cutting of which enables the milk to be drawn in a clean and convenient manner. After a portion of the milk has been taken out the tubes prevent the exposure of the milk to the air, and by this means the product retains its freshness and purity for a long period.

All good things, however, are subject to base or inferior imitations. The convenience and cheapness of condensed milk, and its supposed better keeping properties, have led to its very wide use, in spite of the serious drawbacks to its use as a staple article of food for infants. That even the best brands often do great harm by interfering with proper nutrition, and favouring the development of rickets and scurvey, is well established. And this being true of brands that are prepared by the concentration of cows' milk of good quality, it may be imagined that a much more serious indictment could be

brought against some inferior kinds in the market. The mysteries of composition of these have not yet been satisfactorily revealed, but it is known that skimmed or separated milk is by no means the only ingredient. A vegetable article is being largely imported, and being bought by certain milk manufacturers for the purpose of adulterating their wares. The adulterant is known commercially as the "Tiger Nut," and has the appearance of a rhizome, is no larger than the last joint of the little finger, and resembles a diminutive root artichoke. It is not unpleasant to taste, the flavour being strongly suggestive of condensed milk. It is possible that in this ingredient we have the explanation of some cases of condensed milk wasting and dyspepsia. Glucose, also, is used in several of the cheaper brands. The directions given on the labels for diluting the product with water would, if followed, result in producing exceedingly weak liquids of very little value, and to use such preparations as the sole food for infants would undoubtedly be seriously injurious to their health.

The labels on these spurious brands are evidently intended to mislead. It is a pity firms are permitted thus to label stuff, not merely "partially skimmed" or "skimmed," but made from milk from which the nutrition has been removed with a completeness only practicable by the employment of centrifugal separators.

"Separated" milk is, of course, much inferior to milk which has been merely "skimmed," but in order that the purchaser shall not be defrauded, and human life sacrificed, it is now enacted under a smart penalty that "condensed milk from which any of the cream has been removed must be conspicuously labelled 'machine separated milk' in large and legible type, and on labels pertaining to this article the word 'milk' must not be used unless preceded by the words 'machine separated' in equally bold type."

Complaints are also frequently made of short weight in the tins of some makers.

A 1lb. tin should weigh 18¼ ozs., or 18½ gross, and a few brands may scale more, but a great number are short of this weight.

Apply to Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool.

Condiments.—W. *Sibra.*

A name for seasoning and flavouring substances, such as salt, vinegar, sauces, lemon-juice, spices, herbs, eating-oils, butter, sugar, honey, pickles, sausages, etc., to render foods more palatable, wholesome, or digestible, and particularly a term for those substances which are intended to stimulate jaded appetites.

They are credited with promoting digestion, but their hygienic action is not yet clearly understood, and in some persons their use may be very injurious.

Condiments are really adjuncts to and accessories of food rather than foods, and although there once existed among the faculty a certain amount of prejudice against all condiments except salt, they have long been used by the oldest civilised nations, and in this country there now seems to be a general consensus of dietists in their favour. Their excessive use, however, is said to vitiate the gastric juice and injure the stomach.

The word "condiment" has its restricted and more general application, signifying in the first place the *compound* of which sauces, curries, chutneys, etc., are the representatives, and in the second place all substances used as "food accessories," for the purpose of stimulating and pleasing the palate.

In this latter sense it covers the large family of spices, edible oils, olives, capers, salad plants, including onions and their congeners, mushrooms, truffles, caviare, and even "sweets," such as sugar, honey, and preserved fruits, and last, but not least, mineral salt.

All these have been classed as "condiments" by various authorities.

Gardner's patent "Rapid" sifter and mixer, freely used for above. Prices from 50s. to £100. Catalogues from Wm. Gardner & Sons, engineers, Gloucester.

Cones.—A mixture of bad or slightly damaged flour, heavily alumed, and often used by bakers in bread making. The alum improves the colour, but its use is illegal.

Confectionery.—Sugar, when good, is almost the most valuable thing which enters the mouth of man, woman, or child. (See *Sweets*, *Boiled Sugars*, etc.)

There is scarcely any other equally important feeder of muscle power. The labourer can do nothing better than keep a few lumps of sugar in his pocket. The negroes in sugar plantations renew and quicken their weary bodies by sucking the sugar canes. Sugar is a fine restorative for soldiers. A Dutch Army surgeon asserts that during an expedition in Sumatra he found that the best means to maintain the soldiers in vigour and freshness, not only during the march, but during the fight, was a generous allowance of sugar. Each man was served with a handful at a time. The Swiss chamois hunters bear similar evidence to its marvellous powers of sustenance and of recuperation after exhaustive fatigue.

A writer in *Kuhlow's* gives an account of successful experiments made with sugar as food for athletes by several of the Dutch rowing clubs, by pedestrians, by cyclists, and others whose bodily powers need "a rapid, portable, and innocent stimulant." Sugar is coming more and more into use in the course of "training" for contests, and it is as good for beasts as it is for men. The poor hardly realise as yet, or only realise unconsciously, what a treasure they possess in cheap sugar. Its value in fever has been emphasised by Hupeland and others. That which is supposed to injure the teeth in the consumption of "goodies" is not the sugar, but the so-called "fruit acids" which are introduced to flavour the sugar. Negroes who devour sugar in so huge a quantity, have the best teeth in the world.

For all kinds of confectionery apply to the Compagnie Francaise, London Works, Bermondsey New Road, London, S.E.

Confectioner's, Icing, and Caster Sugars.—These are supposed to be highly refined sugars ground to powder in fast-speeding steel mills; but, like all powdered sugar, should always be looked upon suspiciously, being capable of containing low qualities and adulterants.

In well-appointed English factories the sugar mill is a closed chamber, consisting of several compartments, bearing a number of blades on an axle, and a fan. The blades move at the enormous speed of 2,500 revolutions per minute. The sugar is fed into a hopper, and slowly passes to the disintegrating chamber. Here it is subjected to a fearful pounding, and speedily reduced to a fine powder. The reduced sugar is now blown by the fan through a delivery tube to a revolving sieve, through which it is sifted in appropriate bins according to the size of the granules, ready for use in the different departments of the Confectioner.

Icing Sugar is that which is ground to a very fine, impalpable powder, resembling flour, and should consist of pure cane sugar; for beet sugar, although white enough to look at, is not capable of high crystallisation, and turns a red colour if highly heated, thus spoiling the appearance of some goods.

Caster Sugar is a coarser grade, and may be either specially ground or merely the sifted dust of lump sugar.

Tinted Sugars (or coloured sugars). Names given to the above sugars when artificially coloured blue, red, green, pink, etc., for use in fancy cookery and confectionery. A few pounds of sugar are put in a bright copper pan and gradually heated over a fire while being stirred by the hand. When hot, a little liquid colour (often aniline dyes in solution) is sprinkled over it, and the whole

is again well stirred till quite dry, and the desired shade obtained.

These finely granulated sugars are often made up of the re-refined refuse of high-class sugars, and should only be used as dry powder, not melted.

Confectionery Varnish.—A nice varnish for all kinds of chocolate work and candies—pulled and clear.

The varnish is perfectly harmless and very fragrant, resembling somewhat the flavour of vanilla.

To prepare it, take ½lb. or more of gum benzoin, put it into a bottle, and cover it with finest proof alcohol, cork up tightly, and let it digest for at least two weeks, shaking up once or twice a day, after which time pour off any portion required for immediate use.

It should be the thickness of thin syrup; if too thick, dilute it with alcohol. It will keep and improve for years, and forms when dry a thin glossy film or skin over the goods, which prevents the access of moisture and keeps them from becoming sticky.

Confiture d'Apte. — See *Crystallised Fruits.*

Congou. — A generic name for the teas exported from Hankow, in China.

The word *Congou* itself is a corruption of the Chinese term *Kung-fu* (labour), referring to the labour or work required in manipulating this sort. The tea is a common quality of black, but a grade above Bohea, with larger leaf, not so dusty, and is the chief sort imported into England from China. The Congous grown in the north of Amoy are of superior quality, and probably the best come from Ningchow, although also furnished by Hu-Kuang and Ho-Nan. The best black teas of Fukien are also designated by the generic terms of Congou and Souchong. These come from the districts of Tenmon, Kaisu, Seng-Cheng, Cheng-Lock, Pan-Yang, You-Kai, Pack-Long, Pack-Ling, etc.

Moning Congou is a sort of the same tea produced at Wuning, a district and city, the name of which means "military rest."

Packages. — Chests average about 106lbs., half-chests 61lbs. and 20lbs.

Congreve's Balsamic Elixir.—(See also *Patent Medicines.*)—This has been analysed on different occasions, and declared to be a mere infusion of elderberries, alcohol, benzoic acid, and allspice.

Consolidated Soup. — See *Erbswürst.*

Consomme (pr. cong-smay). — A French name for clear soup, or the "stock," or gravy obtained by simmering or stewing meat, bones, poultry, vegetables, etc., and afterwards straining and clarifying the liquor. It is really a "Liquid Extract of Meat," and called "Consommé" because it represents meats wholly exhausted or consumed by the prolonged cooking. "Potage" is the French term for a *thick* soup.

Constantia Wines.—Three kinds of delicate and luscious wines—both red and white—produced in the district around the town of Constantia, in Cape Colony, South Africa.

These wines have been held in high repute for over a century, and called after the name of the Dutch Governor Van der Stell. They are high priced, but their sale in England has greatly diminished.

Cooking Oil. — See *Edible Oils.*

Coombs' Eureka Aerated Flour. —See *Aërated Flour.*

Cooper. —See *Porter* and *Stout.*

Coorg Coffee.—A rather coarse and strong variety of East Indian coffee. It, however, produces a beverage of fine colour and not unpleasant flavour.

In his "Manual of Coorg" the Rev. J. Richter gives a very interesting description of its cultivation.

Copal. — A commercial name for resinous varnish or semi-fossil gums, generally found buried at various depths in the neighbourhood of gum-yielding trees, or on the site of extinct forests. Most of them come from East Indies, Brazil, West Africa, and New Zealand. (See *Kauri Gum.*)

Copperas. — F. *Couperose;* G. *Kupfervitriol;* Sp. *Caparrosa.* (See *Vitriol.*)

Copra, Copprah, or **Copperah.**—F. *Coprah;* G. *Copranusse;* It. *Noci ai Copra;* Sp. *Nueces de Copra.* (See also *Coker-nuts.*)

The dry and hardened pulp or white kernel of the milky cocoa, or coker nut (*Cocos nucifera*). Copra mostly comes from South Sea Islands, Samoa, Guiana, Cochin, and Ceylon, and its production at best is rather a slow and laborious process; but it forms the single exportable staple of Samoa, and is the one upon which all its business at present rests. The trees are there planted in rows, 40 feet apart, and the trees of each row 30 feet apart.

The trees come into bearing about the sixth year, and the crop increases for 20 or 30 years. The gathering and curing are effected as the nuts ripen, from about the middle of April till the end of October (the dry season). A man or boy with a piece of "sennet" about 18 inches in length, looped on each foot, will climb the slender, swaying tree with as much ease and rapidity as if it were a ladder. The notches or corrugated surface of the bark catches the bit of sennet between the feet, while the weight of the body, pressing downwards, clamps as it were the hollow of the feet firmly on either side of the trunk. By this means, the tree is ascended by a series of jumps, and the climber, with a big knife, cuts away the matured nuts, which cluster close about the butts of the branches. As they fall they are carried into piles. The nuts are not husked, the thick outer husk having become hard and brown, like wood. They are dexterously split in two by an axe, and the hard, white flesh is cut out with a large knife, and spread on mats or boards in the sun till sufficiently dried and cured for shipment. It takes about 8,000 nuts to make a ton of copra. Samoa exports about 5,000 tons of copra yearly, and in the trading stations on the coast enormous profits are made in the trade. There is an interesting British coker-nut plantation at Faleula, about five miles from Apia, in Samoa. It consists of 65 acres.

Another at Lata, on the island of Savaii, of about 225 acres, produces coker-nuts, yielding about 5 cwts. of copra per acre. The best crops yield about half a ton of copra per acre. Suitable "flat-bush" land for growing in the islands of that region varies from 4/- to 24/- per acre, while the price for land in full bearing is £5 to £12 per acre, according to accessibility.

The ordinary method adopted in some of the islands of the South Pacific by the natives for liberating the nut from the shell, is to break the latter into two or more pieces by blows from a hammer, and to leave these exposed to the sun's rays for a few days, when the kernel or pulp contracts into a hard horny substance, and leaves the shell without trouble. Copra is chiefly imported for the expression of *coker-nut oil*, of which it contains 62 to 65 per cent., and which is ordinarily obtained by first soaking the copra in water, and afterwards subjecting it to two pressings. Copra oil is found to be the best ingredient for white soap. The nuts yield the best oil when ripe; but if any of them be gathered too early, the oil is both impure and of bad colour, and will spoil the better oil if mixed with it.

A considerable quantity is now exported from Pemba Island. Pemba copra is generally black, this is because the cultivators, in their haste to sell, do not allow it time enough in the sun, but dry it by fire heat. It requires seven days' hot sun to thoroughly dry it, and as the weather is often wet, a fire is made of the nut-shells, and these give out a dense smoke, which blackens the nuts. Two days of this drying or smoking is sufficient. The kernel is then extracted from the shell, and is ready for export. Cochin copra is the finest.

Copying Ink.—(See also *Writing Inks.*)—This is easily prepared by mixing together eight parts (by weight) of

ordinary ink, three parts of candied or twice refined sugar, and one part of pure glycerine.

Coralline Pepper.—A fancy name given to ground chillies of high, bright red colour.

Cordage.—Port. and Sp. *Cordelaje*; W. *Rhaffau.*

The general name for ropes, cords, and twines. Manilla hemp and Sisal hemp, from Yucatan, are considered the best and strongest material for producing good quality.

A *rope* is properly a stout, twisted cord, usually more than an inch round, and made of hemp; when smaller it is called *cord.*

Coir ropes are made from the fibrous husk of the cocoa (coker) nut. They are fairly strong, and much lighter than Sisal hemp or manilla, also better able to resist the action of water, but are rough, and never tarred for preservation.

Tarred ropes are more durable, but not so strong, as the untarred, and are liable to be injured by the impurities in the tar.

Wire ropes, first made in 1833, are not so flexible as the above, but are thinner, lighter, and less bulky, and, not being affected by moisture, or dryness, are the most durable of all.

Italian cord is made from a remarkably fine variety of hemp, raised by spade culture, and known as Italian garden hemp.

Glazed box-cord is a regular article of retail trade, value 20/- to 30/- per cwt.

Fine twines are usually described as of 2 or 3-ply, and as running so many yards to the pound. A *3-ply choice*, measuring 300 to 600 yards to the pound, is worth 5/9 to 6/9 the dozen lbs.; *3-ply Italian*, about 800 yards to the pound, is 8/- to 8/6 per dozen.

Apply to E. Fellows & Co., 7 and 9 Avonmouth Street, London, S.E.

Cordials.—(See also *Fruit Juices, Syrups*, etc.)—A name given to certain British-made liqueurs, or stimulating beverages, formed of weak spirits, aromatised and sweetened. (See also *Liqueurs.*)

The usual ingredients are rain or distilled water, clean spirit, and flavouring substances.

There are numerous kinds prepared, such as cherry brandy, clove, jargonelle, lime-juice, peppermint, pine-apple, quinine, raspberry, sarsaparilla, strawberry, &c.

Fruit Cordials have come prominently into use lately. When mixed with water they are supposed to form very agreeable beverages, but, unfortunately, many of them possess such a distinct flavour of the chemical substances used to preserve them that they become objectionable, although not unwholesome.

Cordillera Wax.—A product of the wax or varnish tree of the Cordilleras.

Coriander-seed.—F. *Coriandre*; G. *Koriander*; It. *Coriandro*; Sp. *Cilantro*; W. *Llysian y Bara.*

The dried seed, sometimes spelt coliander, of the umbelliferous plant *Coriandrum sativum*, an annual, nearly like parsley, and grows one to two feet high, but has a rather nasty smell. It is native of the South of Europe, much grown in Italy and France, but is also cultivated in Essex and Suffolk, and in several other countries. Large quantities arrive from India. The seeds are round, slightly ribbed or ridged, very light, of a yellowish brown or straw colour externally, nearly as large as peppercorns, and inside the husk each seed consists of two closely-fitting hemispherical mericarps. These seeds have a mild aromatic and pleasant taste when dried and bruised; but when fresh both the seed and the plant emit a rather disagreeable odour.

Corianders and caraways are frequently sown together, the corianders bearing the first year and the caraways the year following.

Coriander-seed is chiefly used by distillers in flavouring gin, and in making

a cordial. It is also used in confectionery and medicines, and occasionally in mixing curry-powder. It covers the taste of senna better than any other substance.

Corigliano Juice.—A superior and well-known brand of liquorice-juice, made in thick sticks at the Italian hill-side town of Corigliano, in the province of Cosenza, near the Gulf of Taranto.

Corinthian Raisins. — See *Zante Currants.*

Corks.—F. *Bouchons*; G. *Tfropfen, Korken*; Port. *Rolhas*; It. *Puraccioli*; Sp. *Tapones, Corchos*; W. *Madarch.* (See also *Bungs, Shives*, etc.)—These are made from the thick and spongy bark of a species of evergreen oak, *Quercus suber*, growing about thirty feet high, in the dry, mountainous districts of Spain, Portugal, Southern France, Italy, and Barbary. Algeria also has vast forests owned by the State, especially in the department of Constantine. The trees in the district of Tell, being of hardy growth, are likely to become very important, and the State sales take place each autumn at Constantine and Algiers. The Spanish Peninsula, however, leads in the supply of corkwood, the trees not only growing wild, but have long been cultivated in forests.

The Spanish cork forests cover about 620,000 acres, the chief provinces being Gerona, 198,000 acres; Huelva, 134,000; Cáceres, 80,000; Sevilla, 74,000; Cadiz, 55,000; Ciudad Real, 28,000; Cordova, 23,000 acres. The forests of Gerona being near the coast, immense quantities are easily exported from there. The Catalonia district produces the best bark, compact and firm, while Estremadura and Andalusia yield cork of much quicker growth, but of inferior quality.

The cork oak sheds its bark periodically if left to itself, but the corkwood is much better if removed artificially, and this may be done without injuring the tree. The tree (called in Spain "*el alcornoque*") should not be barked till 25 or 30 years old, after which it may be done every eight or ten years till 150 years or more old.

The cork of the first barking is called *virgin cork*, but it is not fit for bottle corks. The older the tree the better the corkwood. The cork tree is liable to the attack of a voracious caterpillar—a pest sometimes appearing in millions in the cork tree forests, and in a very short time stripping the trees of every leaf.

Cork being light, porous, readily compressible, wonderfully elastic, and easily cut into any shape, makes it more suitable than any other substance for stoppers for jars, bottles, and other vessels, especially as, notwithstanding its porosity, it is nearly impervious to ordinary liquids.

The wood is also extensively used in making life-preservers and seine corks. When stripped from the tree it is boiled for two hours, cured in the sun for a week, and then pressed into flat pieces for baling and shipping. Before being made into corks the corkwood is charred on each side, which makes it contract and lessens its porosity, conserving the liquor without absorbing it and excluding the air. Immense quantities of corks are also made in the Gironde department of France for use in the Bordeaux vineyards. The bark is mostly grown in the departments of Var and Pyrénées Orientales, but some 8,000 tons of the wood are imported into France from Spain. One pound of cork can be made into 144 champagne corks. The annual export from Spain is over a thousand millions of corks, besides about 1,000 tons of corkwood in bales. (A bale weighs 160lbs.) Total value about a million sterling.

As already implied, Gerona is perhaps the most important centre of production, hundreds of factories being scattered over the whole province, the town of Palmos alone having forty. The chief cork factories in Portugal are in the provinces of Alemtejo and Algarve, but the cork tree grows nearly all over the country, excepting the extreme south.

Large quantities of corks are now cut both by hand and machinery in London, Liverpool, etc., from bales of the imported cork-wood.

"*Daffies*" are the small corks used by chemists 1 to 1½ inch in length, and are usually divided into four qualities—superfine, fine, seconds, and thirds, varying in price from 6d. to 2/- per gross.

"*Vials*" are similar corks, but of smaller size, for vials of ½ oz. to 8 ozs., running from 4d. to 1/2 per gross.

Old Corks and Waste Corkwood.—Granulated cork, heated and mixed with mineral asphalte, and compressed into bricks, makes a very useful pavement, and is exceedingly durable; it is also quite noiseless, possessing great elasticity, and saves much wear and tear to the feet and legs by unyielding asphalte, granite, board, or brick floors, etc.

"Phellosene" is the name given by a French inventor to the substance he describes as artificial cork, and which may be used for all purposes for which cork has hitherto been found needful. It is an analogue of celluloid, and consists of cork bark ground to an impalpable powder and agglutinated by a solution of nitro-cellulose in acetone. This material is made into a doughy mass, compressed into moulds and dried. It contains about 10 to 12 per cent. of nitro-cellulose, and is said to be a trifle, if anything, more combustible than cork under the ordinary conditions.

For best Corking Machines, apply to Parnall & Sons, Ltd. (See adv., page 9.)

Corn—F. *Grain;* Port. *Cereaes;* Sp. *Cereales;* W. *Grawn.* (See also *Indian Corn.*)

An old Anglo-Saxon term for all kinds of grain, especially the seeds of certain grasses used as food; those mostly used by mankind—such as wheat, rye, oats, barley, maize, rice, and millet—being known as bread-corn or bread-stuffs, the latter term including flour and meal as well as grain.

Corn Balls.—(See also *Pop Corn.*)—Red and white edible balls made of *popped corn,* cemented together with white of egg or other similar substance, and sweetened with syrup or sugar.

Corn-Bread.—See *Maize-Bread.*

Corn Flour.—(See also *Maize.*)—This is not exactly the flour of Indian corn (*Zea Mays*) or rice, but the name given by Brown & Polson to an article of food made by them from maize by a special process. Since its introduction various improvements in the manufacture have been effected by them, until at the present day what is known as "Brown & Polson's" Corn Flour—of which "Patent" is their best brand—is, par excellence, the standard for purity, strength and flavour.

This delicate powder is prepared by an elaborate roasting and washing process, and without fermentation.

The numerous amylaceous preparations sold as Corn Flour, Maizena, etc., are mostly produced in imitation of Brown & Polson's. One kind, known as British Corn Flour, is said to be made from rice. They consist principally of starch, and are all intended for the formation of custards, blanc-mange, puddings, pancakes, and other palatable concoctions; but very few are at all nutritious, and some have proved fatally deficient in several instances where young children have been chiefly fed on them.

It is true Indian corn well ground contains about 11 per cent. of nitrogenous or flesh-forming nutriment, and is therefore a substantive food of the highest class; but many of these prepared Corn Flours contain only 13 to 33 grains out of a pound of such flesh-forming nutriment, instead of the 800 or 900 grains in Indian corn itself; or, in other words, the greater portion is often abstracted by soda or lime during manufacture, and only about 2 per cent. left.

In Corn Flours everything depends on *quality*, for although there are makes at about half the price of Brown & Polson's *Patent*, this brand has the largest and easiest sale of any.

The factory was started at Paisley; and a remarkable illustration of the plant-like propagation of trades and manufactures is presented by the fact that until very lately all the factories engaged in the corn flour business were within a radius of seven miles from their works.

Gardner's patent "Rapid" Sifter and Mixer, freely used for above. Prices, from 50/- to £100. Catalogues from Wm. Gardner & Sons, engineers, Gloucester.

Other Special Firms.—M. E. Holdsworth, 3 Norfolk Street, Bradford; John May, 114 Church Street, Croydon; Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool.

Corn Grits or Samp. — See *Hominy.*

Corn or Maize Oil.—A new product from Indian corn, consisting of a yellow liquid much resembling linseed oil, but cheaper and in every way superior. It is used in preparing paints, varnishes, and soaps, both hard and soft.

The oil is contained in the germinal part of the grain, and amounts to about 4 per cent. of the whole grain. In the process of manufacture the germ is separated from the kernel, and the oil obtained by hydraulic pressure. Unlike linseed oil, it does not lose its clearness when subjected to the cold.

This oil was until recently a waste product which was lost in the ordinary method of making starch and glucose.

A Chicago glucose company is reported to be making over 1,000 barrels of it daily.

Apply to C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Corn Starch Sugar.—(Also known as *New Process Sugar.*)—An American mixture of Indian corn starch with cane sugar.

It has never found a ready sale, on account of the difficulty of drying it; and the manufacture of this anhydrous substance has so far really proved a commercial failure.

Corn Sugar.—See *Glucose.*

Corned Beef. — (See also *Tinned Beef, Scotch Ham Beef, Beef à la Mode,* etc.)—Beef preserved and seasoned either with salt in grains or laid down in brine.

Recipe:—To each gallon of water add 1½lbs. salt, ½lb. sugar, ½ oz. saltpetre, and ½ oz. potash. Boil and skim, and when cold pour over the meat.

Another:—Put the beef into a deep earthenware pan that will just nicely hold it, and cover it entirely with a pickle made in the following proportions: 1lb. of bay salt, 6 ozs. of common salt, 1 oz. of saltpetre, 2 ozs. of salt prunella, ½lb. of brown sugar, and 1 gallon of water. Boil these ingredients for 20 minutes, then skim carefully, strain, and use when cold. This pickle can be used over and over again if, after each time of using it, it is reboiled with the addition of a little more salt.

Corned Beef is also imported in tins of 2, 4, 6, and 14lbs., in a cooked condition.

Cornish Pilchards.—See *Pilchards, Sardines,* etc.

Corsican Wines. — See *French Wines.*

Cosaques, Crackers, etc.—Bright coloured paper bags, each containing one or two sweets and a surprise, such as paper slip with motto, or caps, costumes, etc., cut out in tissue paper of various colours. They used to be called Bonbons, and are very popular with young people at Christmas parties, balls, fêtes, etc.

Cosher Foods.—See *Kosher.*

Cosmoline.—See *Vaseline.*

Costa Rica Coffee. — This is a large and bold growth, colour bluish green, and giving a strong and useful, but somewhat coarse, liquor.

Cottage Cheese.—(Also known as *Smear-Case* or *Pot-Cheese.*)—A preparation of pressed curds, made without rennet, and served with salt or with sugar and cream.

Cottenham Cheese.—A new-milk cheese produced around Cottenham, near Cambridge.

It has a peculiarly fine flavour and consistency, not unlike Stilton in taste and appearance, but flatter and broader in shape.

Cotton-seed Cake.—F.. *Tourteau de Coton.* (See also *Oil Cakes.*)

A nutritious food for feeding cattle, and particularly for sheep. Cotton seeds as oil seeds were first imported in 1847; but the value of the "*Cake*" was only discovered about 1860. It consists of the husks and refuse of the seeds of the cotton-plant, *Gossypium,* pressed into flat cakes, after they have been ground and more or less of the oil has been extracted. The seeds weigh about twice

as much as the cotton itself, and the "hulls," which comprise 48 per cent. of the weight of the seed, are the most valuable part. In a loose and dry condition they form a perfect cattle food, and if mixed with a little meal are remarkably fattening. Hulls are sold in the United States at 3 to 10 dollars a ton, which is far below their intrinsic value, and most of the Chicago and Kansas dressed beef is really produced from cattle fed on cotton-seed hulls. Ninety per cent. of the value of these hulls is available for fertilisers, after being used as food, and *Cotton-seed bran* is a still more nutritious product. The seed itself contains casein, 6 per cent.; dextrin, 2; sugar, 2; febrin, 23·7; woody fibre, 32·1; starch, 9·6; greenish-yellow oil, 9·6; yellow wax, 0·8; water, 8·0; ash, 8·0; and it yields by grinding 56·5 per cent. of a yellow meal, which may be also used with milk in bread-making. Egyptian cotton, as well as the "Sea Island," or "long-staple" cotton (*Gossypium barbadense*), have naked seed, while the "upland," or "short-staple" cotton (*G. herbaceum*) of the United States and Brazil, has the seeds encased in a mass of fibre or lint firmly fixed to the seed-coat.

The cotton-seed crushed in England is mostly Egyptian, in fact, about 90 per cent. of the cotton seed imported is from Egypt, and about half of this is received and crushed at Hull, but in the United States and Brazil the chief seed used is the "upland," as the Sea Island cotton only grows over a very limited area.

The upland seed has therefore to be first delinted, cleaned, or decorticated, and this entails considerable expense and waste, while the Egyptian and Sea Island seed needs only to be crushed, heated, and pressed. New Egyptian seed usually reaches England from Alexandria end of January or early in February. The fluffy American seed will not stand storage nor exportation well, because the moisture absorbed by the fibrous envelope creates fermentation, and, this being liable to cause internal irritation in some animals, scientific records in the Southern States of America preponderate against the use of Upland seed as food for sheep and dairy cattle.

Before 1887 there were only two methods of getting rid of the lint, one being a chemical process which destroyed the fibre, and the other a mechanical process which crushed the shell and extracted the kernel. In both the adhering lint was wasted, being destroyed by the former and rendered useless by the latter through being mixed with the broken shell. Inventions patented by Mr. J. Y. Thompson in 1887 and by Mr. M. Crawford in 1888 perfected a machine for preserving both seed and lint for commercial purposes. Until the invention of 1888 the lint never existed as an article of commerce, but it is now of great value, being used for the manufacture of gun cotton, cordite, and paper. Brazilian seed is bought for £3 10/- a ton, and after it has passed through this machine £5 15/- per ton is obtained for the cottonseed—nearly as much as for the Egyptian—and from £5 to £6 for the lint, there being a ready sale at Liverpool and elsewhere.

Cotton-seed Oil. — A sweet oil, colour pale straw to yellow when purified, while the crude unrefined oil is red. This oil, now a very important product, is extracted by powerful steam or hydraulic pressure from the boiled seeds, cleaned and decorticated, of the cotton tree above referred to.

In America, where immense quantities are produced, it is divided into four classes: crude, refined (of a pale orange colour), purified, and bleached.

Its extraction is a somewhat worrying occupation, for besides the trouble of a difficult and imperfect and rather wasteful decortication, the colouring matter and tannin present are a constant source of care.

But of all vegetable oils introduced during the past thirty years, that from cotton-seed has found the greatest favour, both in this country and abroad, owing to the many and still increasing uses to which it can be put. There are over 250 mills in the United States—27 of them in South Carolina. When highly refined it is regarded by many as a very wholesome and nutritious article

of diet, and far superior to hog's fat. Being only about half the price of good olive oil, it is extensively used in hotels and large establishments for best cooking purposes, such as frying, making bread and pastry, mixing with lard, and for other kitchen purposes. Physicians, however, in the Southern States of America testify strongly against its use as food, instancing the deadly effects of the meal on sheep and cattle.

Large quantities are used for adulterating olive oils and lard, while the lower qualities are used for making both hard and soft soaps, etc. The presence of cotton-seed oil in lard, etc., is best detected by nitrate of silver. It reduces the silver to a metallic state, and is the only oil that will do this. Cotton-seed oil is not strictly a drying oil, although it will act as such when mixed with boiled linseed oil, but when added to olive oil it behaves as a non-drying oil. It is unfit for lubricating purposes on account of its clogging properties, and it turns rancid so fast that it is of no use even for making margarine.

It is, however, an excellent oil for laying on new woodwork, tools, etc., and much better than coal oil, kerosene, or even linseed oil. It is rapidly absorbed, and does not gum nor sweat out in hot weather. The seed contains some 25 per cent. of oil, a ton of seed yielding about 76 gallons, and there are about 1,000lbs. of seed to every bale of cotton. Value of seed £5 to £6 a ton, and of the oil £18 to £21 per ton.

Apply to C. Windschuegl & Co., I Leadenhall Street, London, E.C.

Coulommiers Cheese.—(see also *Brie Cheese.*)

A soft kind of whole-milk cheese, about 6lbs. each and usually sold fresh, or at least within ten days of manufacture. In making this cheese the coagulation is protracted, and the ripening really takes place before the curd is ladled out into the forms.

Coumarin or **Coumarine.**—A natural perfume, originally discovered in the Tonquin or Tonka Bean (*Dipterix odorata*), and much employed for perfuming snuff, tobacco, etc.; also to give flavour to the Swiss cheese called Scabzieger. A like substance has also been found to exist in and to impart their well-known and agreeable odours to several of our most common European plants, especially to *Anthoxanthum odoratum*, the sweet-scented vernal grass to which we are in the habit of ascribing the fragrance of well-made hay.

It is easily extracted from the Tonka bean by alcohol, and by evaporating the alcoholic solution the Coumarin is obtained in a solid state.

It forms white brilliant needles of an agreeable aromatic odour. When heated it rises in vapour, and this vapour, when inhaled, acts powerfully upon the brain.

It consists of carbon 73·97, hydrogen 4·11, and oxygen 21·92, so that it is richer in oxygen than most other volatile oils. The same odour which gives flavour to the Tonka bean also exists in the Faham tea of the Mauritius (*Agrœcum fragrans*), in our common melilot trefoil (*Melilotus officinalis*), in the blue or Swiss melilot (*Melilotus caerulea*), in the common sweet woodruff (*Asperula odorata*).

Counter.—The *counting-board* in a shop. "Counter-caster" is used by Shakespeare as a term of contempt for a shopkeeper. "Counter-jumper" is the modern synonym.

Couscoussou.—See *Koskossoo.*

Cowberries.—See *Whortleberries.*

Cowheel.—See *Trotters*, etc.

Cowries.—F., *Cauries.*

Small shells brought from the Maldives, and certain other islands, which pass current for coin in some parts of India and on the East Coast of Africa. Their value is about 1-130th of a penny. Spices and other grocery products are often bought from the natives and paid for in these shells.

Cowslip Hyson.—See *Hyson.*

Cowslip Tea (also known as Pagle or Paigle Tea).—An infusion obtained

from the dried flowers of the cowslip, *Primula veris*, said to have narcotic properties.

Cowslip Wine.—(See also *British Wines.*)—A wine generally made by fermenting cowslips with sugar, and used as a domestic soporific.

Crab-apples.— See *Siberian Crabs.*

Cracker Biscuits.—See *American Crackers.*

Cracknel Biscuits or **Cup Cracknels.**— Very light, puffy, and brittle biscuits, with peculiar smooth and shiny surface, made from paste that has been boiled before baking. They have a dry powdery taste, reminding one of roasted chestnuts. Ingredients: Flour, yolks of eggs, butter, and sometimes slightly flavoured with rosewater and nutmeg. After being mixed and rolled the paste is thrown into a seething cauldron of clear boiling water, and for the moment disappears, but rises in a short time ready for the attendant, who with a wire net plunges it immediately into a bath of cold water. The baking then follows.

Ordinary cracknels are of oval shape, depressed in centre, say, 3 ins. long by 2½ ins. wide, and ½ in. thick. About 25 to lb., and about 4¼lbs. fill an ordinary tin.

Fancy Cracknels or *Star Cracknels* are the names given to the same kind of biscuits when cut in various fancy shapes, oval, square, triangular, star-shaped, etc., about half the size of ordinary cup cracknels.

Toy Cracknels are so called from their smaller size, about ⅛ the size of cup cracknels. Price of all sizes the same, about 96s. per cwt.

Cranberries or **Bogberries.**—W., *Ceirios y Waen.*

The red globular fruit of the plant *Vaccinium oxycoccus*, not quite so large as cherries, and have a sharp, acid, and fairly agreeable taste. The cranberry thrives best in damp, marshy ground in cold districts. The plants are easily cultivated, and are found in North Lancashire, Cumberland, also in Scotland. The banks of the Dee, the Don, and the Spey used to produce large quantities. Enormous quantities are imported from Sweden, Norway, Siberia, Russia, New South Wales, etc. Doubtless the tough skin and the facility with which the fruit can be packed and shipped favours the cranberry business. The Scotch make a great feature of this branch of trade, some grocers handling several tons of the berries during the season.

CRANBERRIES.

The cranberries when gathered are merely put into casks, which are then filled up with water. They are quite sour, with a flavour approaching red currants, but are often filled fresh into bottles, kegs, etc., and used for pies, tarts, sauces, especally at sea for preventing scurvy.

In Russia a "Water Ice" is made from the juice of the cranberry gathered after it has been slightly touched by the frost, then sweetened and flavoured with vanilla. It is a great favourite with invalids on account of its sub-acid flavour, and is inexpressibly grateful to the fevered palate. Cranberry jelly is also extremely popular throughout Russia.

For *Cranberry Jam.*—Use a pound of sugar to every quart of fruit. The sugar, water, and berries should all go on the fire at once and be boiled rapidly for a short time—say, 12 or 15 minutes. No other method has been found to give so satisfactory a result.

American cranberries have been imported as far back as 1847, when the first barrels were shipped to this country. They are much the largest, and are of a brighter red colour, but are not equal to the smaller kinds in flavour.

Canary Cranberries generally come in cases—Baltic in kegs, American in crates. Much of this sharp acid fruit when crushed or damaged on its arrival in this country is bought up by the cheap jam makers to use along with old figs, dates, raisins, etc., in the production of their "Fruit Preserve" or "Mixed Jam."

Cray or **Craw-Fish.**—See *Lobsters.*

Cream —F., *Crême;* Port., *Nata;* Sp., *Crema;* W., *Hufen.* (See also *Clotted Cream* and *Crêmes.*)

A rich yellow crust which rises to the top of new milk when at rest, and consists mostly of small balls of fat, with a little serum and casein, the latter being a somewhat indigestible substance. The yield of cream from milk varies from 12 to 24 per cent., and may be increased by dropping into the milk a small piece of zinc. The time it takes to rise depends on the temperature. With the thermometer at 43 deg. Fahr. it requires 43 hours, at 50 deg. 36 hours, at 55 deg. 24 hours, at 68 deg. 18 hours, at 77 deg. only 12 hours, and at 80 deg. all the cream will rise in 10 hours. The larger cream globules rise first and so on to the smallest, which will scarcely rise at all.

The larger the globules the more easy the cream is churned into butter; hence the cream of the old milch cow is slower to churn than the large fat globules of the newly calven cow. The globules get smaller the longer she remains in milk. (See *Milk, Condensed Milk, Neapolitan Ice Cream,* etc.)

Cream Cheese.—Per., *Panir.*

These vary somewhat in composition; sometimes they are made from the raw creamy "strippings," sometimes from a mixture of milk and cream, but usually contain only about 5 per cent. of casein and from 50 to 70 per cent. of fat. They are generally made in small oblong, square, or round cakes, a light, steady pressure of 2lbs. to 4lbs. only being applied to press out part of the whey. After twelve hours it may be placed on a board or trencher and turned every day until dry. If kept it ripens in three weeks, but it is often eaten while fresh. A little salt and powdered lump sugar are often added. It is not properly a cheese, but merely cream dried sufficiently to be cut with a knife, and is of a soft buttery consistency and will not keep long.

They should be kept in a cool dry place, for dampness causes mould, and gives the cheese a bad appearance. If exposed long to the air or in a draught they are apt to run into a liquid, and become offensive to both the smell and taste, although the fashion is not to eat them until this decomposition has begun.

Never place the cheese on the shelves during the summer months, because the heat will cause it to run, and affect its flavour, so as to render it unsaleable.

It is often made from milk partly skimmed, so that the *real cream* cheese is usually called "double cream," and may be made either by curdling with rennet or from sour cream.

A good cheese should be made from the best quality of cream; 8lbs. of cream will make about two dozen 4 oz. cheeses to retail at 6d. each.

They are now often ripened by microbiological processes, and it is stated that amongst the numerous organisms concerned the chief part is played by the *Oosporo lactis.*

Any of these soft cheeses, such as York, Bath, Lincolnshire, Camembert,

Gervais, Pont l'Evêque, Coulommiers, Port du Salut, etc., sell readily, especially at seaside resorts and in large towns, and they can easily be made at any farmhouse, but the retailer should only take one week's supply at a time.

Cream of Tartar. — F., *Crême de tartre;* G., *Kremor tartari;* It., *Cremore di tartaro;* Lat., *Acid potassium tartrate;* Sp., *Cremor de tartaro.*

The powdered crystals of tartar which form out of boiling argol, or crude tartar, or, in other words, the purified and crystallised potassium bi-tartrate. It is, in fact, a combination of hydrogen, potassium, and oxygen; has an acid taste and gritty feel, and will not form into a paste. It should dissolve in hydrochloric acid, sulphuric acid, sodium hydrate, or potassium hydrate.

It should contain 99 per cent. of the pure bi-tartrate of potash. Mixed with bi-carbonate of soda it becomes an excellent substitute for yeast.

Tartar exists largely in grapes, and being insoluble in alcohol, it forms the deposit known as argol during the fermentation necessary in wine-making. Hence a large quantity is thus prepared from the hard saline crust, or argol, which forms on the sides of wine casks, in white or red crystals, according to the colour of the wine.

The argol is first dissolved in hot water, then treated with a little pipe-clay and animal charcoal to remove the colouring matter derived from the wine, and the filtered solution is then set aside to crystallise.

It is chiefly produced from this source in Italy, France, Spain, and Portugal, and largely exported in crystals or powder through Bordeaux in France, and Messina in Italy, either in 5 or 10 cwt. casks; the Italian coming from Bologna, Leghorn, and Venice is, however, the best. The importation from Bordeaux during 1897 were 38,048 cwts. of cream of tartar and 12,626 cwts. of raw tartar.

Cream of tartar is also now refined in both England and Germany, and these are sold at a guaranteed percentage of bi-tartrate of potash, which has not been the case with the French. The quality and value depend largely on the amount of refinement it undergoes and the amount of impurity taken out or left in. *Crystola*, *Cream Powder*, *Acid phosphate of calcium*, etc., are cheap substitutes or adulterants. (See also *Argol* and *Tartaric Acid.*) Cream of tartar is often adulterated with fine granulated rice, which is best detected by getting a chemist to heat 10 grains in a test tube, when a few drops of tincture of iodine will soon separate any starchy matter from the cream of tartar; or a simpler test is to stir half a teaspoonful in a large cup of boiling water, afterwards pour it into a glass tumbler, and if clear it is pure, but milkiness is a sign of adulteration; or it may easily be tested by direct titration and neutralisation with bi-carbonate of soda, that requiring the most soda being the strongest sample. The ignition process recommended in the British Pharmacopœia is very inconvenient and tiresome, also quite inaccurate when there is much calcium sulphate present.

A solution of 1·88 gm. of potassium bi-tartrate in 100 c.c. of hot water should require for complete neutralisation not less than 9·9 c.c. of normal potassium hydrate v.s. (each c.c. corresponding to 10 per cent. of the pure salt), phenolphthalein being used as indicator. Terra alba (white clay), alum, etc., are also frequent adulterants in cream of tartar.

Having regard to the Food and Drug Acts, it is safer for grocers to sell it simply as cream of tartar, and not as "refined" or "purified." A guarantee of purity should always be demanded.

Gardner's patent "Rapid" sifter and mixer, freely used for above. Prices from 50s. to £100. Catalogues from Wm. Gardner & Sons, engineers, Gloucester.

For cream of tartar apply to Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool.

Creamery Butters. — (See also *Danish*, *Irish*, *Blended*, and *French* Butters.)

These are a class of butters manufactured at large factories, or "creameries," carried on sometimes by the co-operation of farmers and sometimes by private companies. The fresh milk is brought daily from a number of farms in the surrounding district, and after being tested (generally by Babcock's simple system) for its cream or fat contents the milk is at once heated and "separated" by steam machinery. In some creameries it is the custom to return the separated milk to the farmers at a fixed price, but in others it is manipulated into "condensed milk" and tinned. The cream, however, is quickly cooled and ripened to the proper degree, churned, coloured, and worked into butter; also salted, if desired, by machinery.

By this system a large quantity of the finest butter of uniform quality can be supplied to shopkeepers in large cities.

A "co-operative" creamery or dairy is an establishment erected and maintained by the farmers, either with their own money or by means of a loan obtained by them at a fixed rate of interest. The farmers, or milk suppliers, frame the regulations themselves for the conduct of business, and fix the prices to be allowed for the milk or cream bought, or other bye-products taken away.

Imitation Creamery Butter.—This is butter churned in the farm-dairies and gathered by waggons every morning. It is taken at once to the factory, at a central point, where it is washed, salted, and packed in paper-lined tubs, and sent to market while it is yet only two or three days old. (See also *Ladled Butter*.)

Creameries are now quite numerous in Ireland, but in some districts have not been so far very successful, especially where the farms are small. These farmers find the carrying of small quantities of milk to the distant creamery an irksome and comparatively expensive undertaking, and where the creameries condense the separated milk the farmers lose both it and the buttermilk.

Leading importers: George Wall & Co., Ltd., Liverpool and Manchester, selling agents for the principal Irish creameries (see advt. page 10).

Crecy. — The French name given to a variety of carrot produced in a district of that name. These carrots have long been celebrated in cooking, and are sold in a dry and preserved state; also mixed with other products, hence: *Riz Crécy*, *Tapioca Crécy*, etc.

Cremes. — The French word crème (cream), besides meaning milk fat, has several other applications. It is used to denote:—(1) Certain fine cordials or spirituous syrups (see *Liqueurs*); (2) the white interiors of certain chocolate bonbons, such as "Chocolate Creams"; (3) superior qualities of refined preparations, such as *Crème de riz* (rice flour), *Crème d'orge* (prepared barley); (4) table sauces, such as "Salad creams" and others made from milk, sugar, eggs, oils, etc., and variously flavoured with vanilla, coffee, cocoa, pistachios, etc.; (5) certain polishes for furniture, boots, etc., like "Furniture cream," etc.

Creosote. — This was discovered in 1830 by Reichenbach, who extracted it from the tar of wood.

Cretan Produce—The somewhat lawless island of Crete lacks proper cultivation and is only thinly populated, so that its exports are limited both in value and number. They comprise *Olive Oil*, *Raisins*, *Locust Beans*, and *Valonia;* also soap, wine, almonds (shelled), and a few oranges. The four first-named are those which find their way to this country, but the Turk does not bother much about statistics.

Cretan Wines.—There are two chief kinds, known as *Malevisi* and *Arhanes*.

The latter is of a dark red colour, containing 13 or 14 degrees of alcohol, and is exported to France in considerable quantities.

The former is of a rather lighter tint, and containing 14 or 15 degrees of alcohol. There is, besides, a white wine, which has no special name.

In 1894 70,000 *quintals* were exported from Candia, of which the greater part went to Nice, some to Egypt and Trieste, but none to Italy.

The exports from the port of Canea are only small, and the wines there are also of a dark red colour, the better kinds being known as *Kissamos* and *Ebraica*. About 1880, when the phyloxera was devastating the French vineyard, wine-growing in Crete received a great fillip, and the population neglected every other industry.

Cretan wines are very rich in alcohol. Cretan *Raisins* are chiefly consigned to Trieste.

Crocus Powder.—See *Red Crocus Powder*.

Crosnes.—See *Chinese Artichokes*.

Crumpets.—See *Muffins*.

Crushed Sugar, or **Crushed Lump.**—Commercial terms for inferior loaf sugar, crushed while still soft and moist, and packed in hogsheads or bags instead of being sent out in loaf form.

Crust Coffee.—See *Coffee Imitations*.

Crystallised and Glace Fruits, etc.—(See also *Candied Peels*, *Preserved Ginger*, etc.)

These are for the most part imported from France, Germany, Portugal, etc., in fancy boxes of 7 or 8lbs., superior qualities coming from Metz and Nice.

The chief kinds and approximate prices per lb. are:—Almonds, 2s.; Angelica, 1s.; Apricots, 1s. 6d.; Assorted fruits, 1s. 3d.; Bows, 1s. 2d.; Brochettes (small brooches), 1s. 1d.; Cherries, 1s. 3d.; Chinois (golden and green), 1s. 4d.; Citrons, or "Poncires," 8d.; Cornets, 1s. 1d.; Figs, 1s.; Ginger, Crystallised, 1s.; Candied, 10d.; Greengages, 1s. 5d.; Knots (Nœuds) (3 colours), 1s. 1d.; Lemon Peel, 5d.; Lunettes (spectacles), 1s. 2d.; Melons, or "Pastéques," 1s.; Mirabelles, 1s. 9d.; Orange Peel, 5d.; Pâtes, assorted, 1s. 3d.; Peaches, 1s. 4d.; Pears (white or pink), 1s. 3d.; Pine-apples, cubes, 2s. 6d., slices and lumps, 2s. 3d.; Plums, 1s. 2d.; Raspberries, 1s. 4d.; Strawberries, 1s. 8d. The preparation of several kinds in this country is, however, increasing.

Almond fruits similar to unripe peaches are made available for eating in this way only. The object of candying being simply to form a confection or sweetmeat imbued with the aroma, flavour, or medical property of any substance, candies are generally prepared by simply boiling lump sugar with a sufficient quantity of the infusion, decoction, tincture, expressed juice, or even the powder of the particular article, until a portion taken out and cooled becomes quite solid when it is either poured out on a marble slab or into tin, marble, or paper moulds, dusted with powdered lump sugar.

When the object is to crystallise the form and character of the fruit or vegetable in the candy the substance is boiled until soft, and then suspended in concentrated syrup, in the cold, until they become transparent, after which they are either dried in a current of warm air or in a stove at a heat not exceeding 120° Fahr.

The syrup thus penetrates into every part of the fruit, and prevents the natural decomposition that would otherwise occur.

The syrup must be kept fully saturated with sugar by reboiling it once or twice during the process.

The plums, greengages, etc., for crystallising are best gathered young and tender, before the stone hardens. Fruit preserved in this way keeps well,

and it would be a strict economy to thus *thin* heavily-loaded fruit trees, by utilising the excess, say one-half, and thereby improving the quality of the remainder left to ripen. The surplus, if not thinned, generally falls and perishes, so it would be all clear gain except the labour.

Crystallised and Glacé fruits, Flowers, etc., are prepared in much the same way in France. The business is carried on largely at Apt, in Vaucluse, at Clermont, in Auvergne, as well as at Marseilles, Grasse, Avignon, etc. The theory is to extract the juice from the fruit and replace it with sugar and water syrup, which on hardening preserves the fruit from decay, and at the same time retains the natural shape of the fruit.

The fruit should be graded, and only one size dealt with at a time. The exact degree of ripeness is all important, which should be under rather than over ripe.

Pears, pines, peaches, and quinces are peeled, and the larger fruits cut in halves; citrons are cut into quarters and soaked for a month in sea water, and the stones of apricots, peaches, and cherries are carefully removed without injuring the fruit. The fruit is then put into a basket or bucket, with a perforated bottom, and immersed in boiling water, which quickly penetrates the pulp, dissolving and diluting the juice, which is thereby nearly all eliminated, when the fruit is subsequently taken from the water and drained, leaving only the solid portion of the fruit intact. This process is called blanching, and requires great experience and care. The period of immersion depends on the size and ripeness of the fruit. If left too long the pulp is either cooked too much or is left too dry and woody; if taken out too soon the juices left in the pulp prevent perfect absorption of the sugar afterwards, and cause a fermentation which spoils the product.

After being thus scalded, some of the fruits, especially apricots, are sorted into two or three classes, according to the degree of softness produced, as, if kept together, they would take up the sugar differently, some losing their form entirely while others would take up very little. For these different grades sugar syrups of different thicknesses are required; the softer the fruit the heavier the syrup is needed. For the same reason each kind of fruit requires a suitable strength of syrup. Pears, citrons, and pines, which remain hard and firm, take a syrup of 18° to 25° density, while apricots, plums, and figs are treated with syrups which gauge from 30° to 40° by the aerometer.

The requisite syrup having been prepared by dissolving the fruit in pure water, the fruit is immersed in it, and left, for a certain period, in large earthenware pans, glazed inside, and having a capacity of about 8 gallons. The syrup penetrates the pulp, and gradually withdraws and replaces the remaining fruity juice, which, as it exudes and mingles with the transparent liquid, produces a certain filmy or clouded appearance, which marks the commencement of fermentation. When this has reached a certain stage the vessel containing the syrup and fruit is placed over the fire and heated to 212° F. This corrects the fermentation, and raises all impurities to the surface, whence they are removed by skimming. If the syrup is of the proper density this process of impregnating the fruit with sugar will be complete in about six weeks, during which time it is usually necessary to perform this heating operation, as above described, about three times. The fruit is then taken out, washed in pure water to remove any flaky particles that adhere, and is then submitted to one or two finishing processes, as follows: If the fruit is to be "*Glacé*"—that is, covered with an icy, or transparent coating—it is dipped in a thick viscid syrup of sugar, and left to dry and harden rapidly in the open air. If it is to be crystallised it is dipped into

the same syrup, but is then cooled and dried slowly in a kiln or chamber warmed to a temperature of 90° F. This causes the thick syrup with which the fruit is covered to crystallise, and assume the usual granulated appearance.

During the process of impregnating the fruit with sugar, the syrup in which it is immersed is gradually deteriorated by losing its sugar and absorbing the juices of the fruit. It is finally utilised in the preparation of *Confiture d'Apt*, which is made of the soft, uncooked, and irregular pieces of fruit of all kinds, mixed in irregular proportion, and preserved in the spent syrup, which is boiled down to the required consistency.

A quantity of plums, peaches, figs, and apricots come from Portugal packed up in round boxes of various sizes and decorated with paper lace, silver wire, tinsel, etc., making up a somewhat showy *tout ensemble* and not unsuitable for ornamenting a dinner-table. The process is simple in the extreme, and consists, roughly speaking, in boiling the fruit (before it is quite ripe) with sugar six times in the same water, after which the sugar is allowed to run off and the fruit is put on trays to dry in the open air. This manufacture in Portugal has been a kind of speciality of the nuns, but since the gradual extinction of the convents the trade has passed into other hands.

All candied and crystallised fruits, except candied citron, lemon and orange peels, are used without further cooking. Most of them are more particularly described under their separate names.

Crystallised Flowers.—In addition to the fruits above referred to, we have now from France and Turkey, violets, rose leaves or petals, orange flowers, and lilacs, crystallised in a similar way. Wholesale prices, 2/- to 3/- per lb. (See *Orange Blossoms.*)

Crystallised and glacé fruits, being put up and weighed fresh from the syrup, often lose 10 to 20 per cent. in weight on account of evaporation of the juices, but it is usual for the retailer to be charged the actual net weight at time of delivery.

Special Firms.—M. & W. Jones, Villa Nova de Gaya, Portugal; Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool; J. A. Sharwood & Co., Ltd., St George's House, London, E.C.

Cuago Nuts.—These globular seeds, about the size of a marble, are the fruit of *Myristica surinamensis*, first imported into Liverpool as oil seeds from Para in 1881. They have no smell and very little taste, but yield about 71 per cent. of solid fat, and the meal, after expression of the oil, is useful as a substitute for linseed in making poultices.

Cube Sugar.— Prior to the invention of ready formed cubes of uniform size, the sugar refiners turned out lump sugar in Loaves or "Titlers," which it was the business of retailers to chop into small lumps of irregular size and shape. It was a German who first showed how refiners might form their dry, granulated sugar into neat little cubes of any size desired. The late Sir Henry Tate and Messrs. Martineau joined in securing the German patent, and the Tate firm soon worked it out to the greatest advantage.

"Tate's Cubes" have now long been a household word. It is remarkable that the great refiner and philanthropist was originally but a retail grocer in Liverpool, who not only served his own apprenticeship to the trade, but also taught several others, some of whom are still alive and are proud to testify to the noble and industrious character of their esteemed employer. A few old grocers yet living can remember how in the fifties Mr. Tate's sugar refining began by his buying up, and experimenting on, any odd lots of damaged sugar that fell in his way. Encouraged by success, he subsequently joined Wright's Refinery in Manesty Lane, and eventually sold his grocery establishments. It should be a grand object lesson for the humblest member of the trade to see how this persevering grocer developed into the largest and most influential sugar-refiner, not only amassing an immense fortune, but giving away hundreds of thousands, and leaving behind him an ever-increasing

business; while nearly all the old-established and experienced refiners of his day have been relinquishing the sugar industry as a hopeless enterprise.

Cubeb Pepper (often called *Cubebs* or *Bennin Pepper*).—The genuine article is composed of the dried pedicelled berries of the vine or shrub, *Piper Cubeba*, or *Cubeba officinalis*, a native product of Java, Borneo, and Sumatra, but mostly imported into this country from Batavia and Canton.

They are of grey colour and about same size as common black pepper-corns, but somewhat longer, rather wrinkled, and with a short slender stalk.

Cubebs have a fragrant, agreeable odour, with a hot camphor taste, and, although once used as a spice, are now only employed medicinally.

Market value, 22/- to 30/- per cwt.

A spurious kind, distinguishable by a mace-like odour and taste, is frequently substituted in commerce.

Imports, about 60 tons yearly, *viâ* Singapore.

Cubic Nitre.—See *Nitrate of Soda.*

Cuca. — The Peruvian name for the fruit of *Erythroxylum Coca.* (See *Coca.*)

Cucumbers. — Du. *Kommommer;* F. *Concombres;* G. *Gurkern;* Ir. *Cucamhar;* Sp. *Cohombro;* W. *Chwerw ddwfr.* (See also *Pickles, Gherkins.*)

The fruit of *Cucumis sativus*, of which many varieties are cultivated, some rough skinned and some smooth, ranging in length from 2 to 18 inches. Some kinds are very bitter, and most of the cultivated sorts are bitter at the stem end.

The bitterness is thought to arise from an imperfect elaboration of the juices; these in the neck being least digested, and consequently more bitter. Greater warmth and light in cultivation is the best remedy. A common cause is the covering of the hot-bed in which they have been grown, but any check occuring in their growth will cause it, as, for instance, eelworms.

Cucumbers are considered remarkably cooling, and are often sliced up in salads. They are somewhat indigestible, but when properly dressed with plenty of oil may be eaten freely, and on the Continent form an important article of food.

Besides the frame cucumbers grown in England for table use, the plant is cultivated as a field crop, particularly in the home counties. In the market garden district of Sandy, in Bedfordshire, ten thousand bushels have been sent to market in a single week. These are cheapest in August.

Immense quantities are raised in Holland, Germany, and France, and thousands of hogsheads, preserved in salt and water, are imported into this country every year, mostly from Amsterdam and Rotterdam, all our large pickle manufacturers depending chiefly on Holland for these and other vegetables.

Before being put into the hogsheads (old claret casks) they are sorted into various sizes or qualities as follows:—

Fine Gherkins.—Young and tender, 1½ to 2 inches long, 40 to 80 to the lb. Prices, 50/- to 60/- per hogshead.

Bastards.—Larger sizes, crooked and mis-shapen fruits, 20/- to 30/-.

Chumps.—3 to 6 inches long and 4 to 5 to the lb., 20/- to 30/-.

Double Chumps.—4 to 8 inches long and generally soft and seedy inside, 15/- to 25/-.

"*Spotted Goods.*" — Fruits covered more or less with small black spots or rust, 15/- to 30/-.

The prices always include the casks, and vary considerably according to the crops and whether new season goods or old.

These cucumbers in brine are also largely eaten by the lower class of Jews, especially in London. The common practice of pouring off and wasting the brine is condemned as a wasteful practice, because it contains a large proportion of the natural juice of the cucumbers.

This juice, besides being valuable in medicine, may also be used in making pomades for the hair and cosmetics for beautifying the skin.

A brilliant green colour is often given to pickled cucumbers by heating them in copper vessels, which by some means, not chemically understood, imparts a sulphate of copper, but while improving

the colour it renders them dangerously poisonous.

Gherkins and cucumbers are often packed in bottles of green glass to lend the contents a fresh green appearance.

For wholesale quantities, apply to Allen Jeeves & Sons, Seddington, Sandy, Beds.

Cucumber Ketchup.—This is made from ripe cucumbers in the same way as mushroom ketchup. Mixed with cream or melted butter, it often forms an excellent sauce for poultry, etc.

Cucumber Mangoes.—A preserved sweetmeat prepared from young cucumbers (gherkins), and highly esteemed for its cooling properties. The antiquity of the cucumber is very great; it was a great favourite with the Romans, and in the 14th century was much commoner in England than at the present day.

Cudbear (Kud-ber).—A purple or violet powder, used in dyeing purple, violet, and crimson. Prepared from various species of Rocella lichens, especially from *Lecanora tartarea*, which grows on rocks in several parts of Northern Europe. It is partially soluble in boiling water; the colour obtained is somewhat fugitive, and it is used chiefly to give strength and brilliancy to blues dyed with indigo. (See *Orchella Weed.*)

Culilawan Bark.—See *Clove Bark.*

Culinary Essences.—See *Flavouring Essences.*

Culinary Herbs.—See *Dried Herbs.*

Culli.—A remarkable variety of maize (Indian corn), which grows in South America. Its grain is of a mulberry hue, and is often used to colour liquors, etc.

Culm.—A fuel which has derived its name from the geological term applied to carboniferous slatey beds in various parts of Europe.

Cumin Seed.—F. *Cumin Nigelle;* G. *Kuemmel;* It. *Cimino;* Sp. *Comino.*

A kind of aromatic fruit, or seed of the *Cuminium cyminum*, an annual, not unlike the wormwood plant and nearly related to the Anise, but stronger. It mostly comes to England from Sicily and Malta, but large quantities are grown in China. It is used in making curry powder, carminative flavourings, like carraway and anise, veterinary medicines, etc., and in Germany it is often used in making bread, also certain kinds of cheese. Norwegian anchovies in kegs are commonly flavoured with this spice.

In form the seeds are linear and flat on one side, and convex and striated on the other. They have a rather peculiar smell and a bitter aromatic taste. Usually retailed at about sixpence a pound.

Cumquats or **Kumquats.**—(See also *Loquats, Guavas*, etc.)—These are the fruit of a small shrub, or dwarf tree (*Citrus japonica*), a kind of orange about the size of a gooseberry, and oval shaped. They are extensively cultivated in Japan, China, and Australia, etc., for preserving or making into marmalade.

They are a very delicious and refreshing fruit, with sweet rind and acid juice, and the Chinese make a celebrated sweetmeat of them by preserving them in sugar.

Usually retailed in pots or small glass jars. Price on London market, 9/- to 11/- per case.

Curacao (often erroneously spelt Curacoa).—A popular liqueur mostly made in Holland from bitter oranges, *Citrus bigaradia*, which have dropped from the trees when young and green, about the size of peas or cherries. The peculiar sort grown in Curacao, one of the Dutch West India Islands, in the Caribbean Sea, is the most celebrated. In Curacao these small green oranges receive the greatest attention, and the fruit itself is only used with syrup to make a sweetmeat or *dulxe*. The *skins* are harvested for a constant market, the fruit being picked when the rind contains its maximum of oil, peeled in quarters, which are then dried, pressed and exported to Amsterdam in half-barrels. By distillation the oil is extracted from the skin or peel, and used to flavour the liqueur.

A good quality is made by Wynand Fockink, Amsterdam, and is known as

the "Curacao of Holland." The oranges are first soaked in water, and then distilled with spirit, which is afterwards reduced with water to about 56 underproof. Sugar is afterwards added at the rate of 3½lbs. to each gallon; a little rum, flavoured with cinnamon, mace, or cloves, is sometimes added. Curacaos vary in colour, and many are made in France. The darker kinds are generally coloured with powdered Brazil wood, and mellowed with caramel. Retail prices, sweet or dry, about 6/6 a bottle.

Curcuma Starch.—See *Arrowroot* and *Turmeric*.

Curd Soap or **White Soap.**—This when of the best quality is the purest soap of commerce. It is usually made from soda and purified animal fat, consisting largely of stearin, and a small proportion of olive oil is added to impart softness.

It often has a very light greyish tint, but otherwise closely resembles Castile soap. It is dry and nearly odourless, horny and pulverisable when kept in warm dry air. Soluble in rectified spirit and in hot water, and should impart a greasy stain to paper.

Curds. — F. *Caillebotte;* Per. *Most;* W. *Ceulfraen*.

A name for the coagulated or thickened part of milk, separated from the whey; and may, with pressure, be formed into cheese. Curds may also be eaten while fresh, either with or without cream, as a dainty, or used in making cheesecakes.

Currants (British). — There are three distinct types of English garden currants—(1) Black Currants or Quinsy Berries (*Ribes Nigrum*), (2) Red Currants, Wild Currants, or Garnet Berries (*R. Rubrum*), (3) White or Yellow Currants, which are really a variety of the Red. They are all closely allied to the gooseberry, and are referred to separately under their respective headings.

When cultivated in quantity for markets and manufacturies, the currants, both black and red, are generally gathered by women—black at the rate of 4d. to 8d. per half-sieve, according to crop, and red at 3d.

The fruit should be coloured, but not soft, or it will not travel well.

The half-sieves should be lined with paper, the fruit even in sample, sound, and free from leaves, and weigh 24lbs. nett. A sheet of paper should also be placed over the fruit, and the package finished with long green grass, kept firm with crossed sticks, the ends pushed through the top of the baskets and cut even. Large, well-ripened, red or white currants are often packed in 1lb punnets, or small, neat boxes or baskets (not returnable).

Currants (Dry). — F. *Raisins de Corinthe*, or *Passarelles;* G. *Korinthen;* It. *Uve Passe di Corinto;* Port. *Passas de Corintho;* Rus. *Korinka;* Sp. *Passas de Corinto;* W. *Rhyfion*. (See also *Patras* and *Zante Currants*.) (A corruption of the word Corinth, once famous for this useful fruit, and still called in some places *Corinth Grapes*.)

(Of course they are in no way related to the small black, red, and white species of *Ribes*, known as "currants" in our gardens.)

Currants, or Corinths, are the dried berries of the small black delicate species of seedless or stoneless grape, known as *Vitis vinifera*, var. *Corinthiaca*. This currant vine is very petted, and will only flourish in certain districts of Greece and adjacent islands. All attempts to transplant them in other lands have failed. It is also curious how these, and a few other vines, have practically lost the habit of seeding in those districts where they have been so long cultivated, and in those districts only, for even in other provinces of Greece the same plants will grow the berries of full size with the stones which are characteristic of the ordinary grape.

Currants are cultivated very extensively in the Islands of Zante, Cephalonia, and Ithaca, and especially in the vicinity of Pyrgos, Olympia, and Patras—which latter is the chief centre of the trade and port of shipment.

The best are those which come from Philicatra, Amalis, Patras, Pyrgos, and Kalamarta, also most of the growths known as "provincial." Excellent

qualities are also produced in Ægion (Vostizza) and the Kolpos district, and many of these are marked Vostizza on the cases, but not always.

Merchants have learnt to rely more upon the Bill of Lading than upon marks for proof of origin.

The crops are very uncertain owing to the attacks of a disease known as "Peronospos," which usually affects the leaves, but sometimes the fruit as well.

The average export of currants from Greece is about 150,000 tons yearly, of which one-third comes to England.

For a few years, 1878 to 1896, France took large quantities of pulped currants (*Raisins à boissons*) for use in wine-making, but the districts then devastated by the phylloxera being now replanted with American plants and the vines in bearing, France has suddenly ceased to buy currants. Indeed, stringent measures have been taken by the French Government for checking and repressing the sale by public wine-makers of drinks made from currant pulp.

In 1841 the average consumption in England of both currants and raisins was only 1¾lbs. for each person. Latterly it has been about 5lbs., and in addition to several other kinds of dried fruits unknown fifty years ago. The consumption of these dried fruits has, however, probably now passed its zenith, for fresh tinned fruits seem to be replacing them in public favour.

The currant vine, being very delicate, requires great care in grafting, pruning, trimming, and watering, and does not bear till six or seven years old, and the harvest, on account of thunderstorms, is very precarious. The berries are small, round, and thin skinned, of red and blue colours. As they ripen they are generally dusted with sulphur to protect them from the *Oidium*, and when gathered are usually dried in the sun.

The clusters or bunches vary in size, up to 300 or more berries, but they will not bear carriage and shipment to this country in a fresh condition.

The Government of Greece has established an ingenious but no less effective measure of encouraging home manufacture and at the same time augmenting its somewhat severely taxed finances. This is called the Retention Law, and it regulates every August the amount of currants available for export to about the quantity required by various markets of consumption.

The Greeks having found that the world's demand for currants is limited, and that an excessive export lowers the prices, to a decided loss to growers, the currant crop each year is surveyed and estimated, and, if considered excessive, each exporter has to deliver to the Government a fixed percentage of his export, so that prices can be kept reasonable. This reserved percentage, which varies according to season, is pulped and sold to distillers, wine makers, etc. As the worst currants are thus kept back, the fruit now exported is much better than it used to be. Currants yield excellent wine, and it is supposed that the first wine ever made was from dried grapes, for the history of currants goes back to mythology, and we are told that the Ancient Greeks for several centuries preferred such wine over that made from fresh grapes.

With a view to prevent currants being gathered and shipped before ripe, the Athens Legislature wisely passed a Bill in 1892 prohibiting any exportation of the fruit before August 28th, and enacting that anyone found guilty in that country of adulterating currants in any form or mixing old ones with the new should be liable to fine and imprisonment.

British steamers, already partly loaded and coaled for the run home, now congregate at the principal Greek ports ready for August 28th, and those supposed to be the swiftest have the preference of shippers.

New currants begin to arrive in England early in September. Grocers should be wary of false packed or repacked currants, the top and bottom of the barrel or case being sometimes packed with good currants, while the inside may be sweepings or rubbish, such as earth, sand, stones, and inferior decayed and discoloured berries.

Each package should, therefore, be carefully examined with the proper in-

strument, or searcher, a sort of long iron crowbar. The average weight in cases is 168lbs., half-cases 70lbs., quarters 40lbs., one-eighths 28lbs.

The Liverpool Drafts on Currants are according to actual weight of packages: —On 3 qrs. 27lbs., the draft is 1lb.; on 2 cwts. 3 qrs. 27lbs., the draft is 2lbs.; and so on, 1lb. extra for every additional cwt.

Until lately, it was necessary to wash or clean all currants before retailing them, but most of them are now fairly free from earth and other impurities, and can be sold without this trouble and loss. Fruit cleaned dry will keep, but washing it takes away the bloom, and injures the flavour.

Numerous machines for cleaning fruit have been brought out from time to time, but the best we have seen is made by Mr. Duckworth, of Colne. It far surpasses any cleaning by hand or otherwise, and is really serviceable. It is already well known as the Dry Conical Cleaner.

Wet or damp being liable to ferment currants and soon turn them sour, they should only be washed as wanted for immediate use, and, even if all right when retailed, they may spoil on customers' hands, and the retailer's reputation suffers.

They lose weight if kept long weighed and wrapped, but gain a little in our climate if kept in bulk.

Importers and Merchants.—Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool.

The best machines for cleaning currants are sold by C. Duckworth, of Colne, and Parnall & Sons, Ltd., Narrow Wine Street, Bristol.

Currant Jelly.—See *Black* and *Red Currant Jellies.*

Curried Fowl. — F. *Poulet au Carry* or *Poulet à l'Indienne.*

Generally sold in tins, and consists of cold roast fowl cut up into small neat joints and stewed for about twenty minutes with sliced onions, chopped apples, curry powder, flour, and gravy, and flavoured with a little lemon-juice.

Sometimes a little butter or cream is added, also shalots or a little garlic.

Curry or **Currie** (from the Persian word Khurdi, meaning "broth" or lard). —F. *Carry.*

An Anglo-Indian sauce or relish, originally prepared in the East Indies, where the great principle seems to consist in the employment of cayenne to give *heat*, fruit to give *acid*, and of raisins or sugar to give *sweetness*. When prepared, it represents a kind of stew made of meat, fish, fowl, fruit, eggs, vegetables, with rice as a characteristic ingredient, and cooked with bruised spices, such as cayenne, coriander-seed, ginger, garlic, fried onions, etc., turmeric, apples, and lemon-juice being frequently added.

Any article of food cooked with this sauce is called "Curried," hence we have curried fowl, curried rice, etc., but curry in England and curry in India are very different. Curries, in fact, are made in great variety according to fancy, but have been strongly recommended for the poorer classes in this country, especially by the late benevolent Duke of Norfolk.

Curry Paste.—A condiment or food accessory prepared of same ingredients as curry powders.

Curry Powder. — F. *Poudre de Carry.*

A condiment of spicery sold ready mixed for making curry sauce. Used extensively throughout India and other tropical countries for giving a zest to other foods, where it seems an absolute necessity as a flavouring mixture. It is composed of turmeric, cayenne, pepper, ginger, and various spices, all ground or pounded into a fine powder.

The poorer natives are able to live almost entirely on rice, if flavoured with a few pinches of curry powder.

There is a great number of recipes extant for curry powders, and they differ chiefly in proportions, for the ingredients used are similar in all. Unfortunately for its popularity in this country much of the curry powder sold here simply consists of ground coriander-seed, turmeric, cayenne, and fenugreek, mixed with a large proportion of sago-flour.

The adulterants to guard against are red-lead, yellow ochres, excess of rice

flour, sago-flour, and other farina, also salt.

A dozen recipes are here given, but care should be observed that all the materials be fresh and finely ground :—

Quality.	Cardamom.	Cassia.	Cayenne.	Celery Seed.	Cinnamon.	Cloves.	Coriander.	Cumin.	Fenugreek.	Ginger (African).	Mace.	Mustard.	Nutmegs.	Pepper (black).	Pepper (long).	Pimento.	Rice Flour.	Salt.	Turmeric.
A	—	—	1½	—	—	—	12	2	3	—	—	—	—	—	8	—	—	—	6
B	1½	—	—	—	—	—	9	—	—	3	—	3	—	3	—	—	—	—	9
C	—	—	2	—	—	¼	16	—	3½	1½	½	—	—	1¼	—	⅜	—	—	6
D	—	—	1	—	—	—	3	3	1½	—	—	—	—	4	—	—	—	¼	4
E	2	—	1	—	—	—	12	1	—	4	—	—	—	4	—	—	—	—	8
F	—	2	5	1½	—	—	17½	12½	6½	2½	—	6	½	5	—	—	7½	3	12½
G	2	—	2¼	—	2	1	9	—	—	1	1	3	—	6	—	—	—	—	9
H	—	—	1	—	—	—	2½	2½	1¼	—	—	—	—	4	—	—	—	—	5
I	1½	—	1¼	—	—	½	10	1	—	3	—	3	—	3	—	—	—	—	9
J	—	—	2	—	—	—	12	2	2	¼	—	4	—	4	—	—	—	1	4
K	—	2	1¼	¾	—	—	8¾	7½	3	1	—	2½	¼	2½	—	—	7½	¾	7½
L	—	—	1	—	3	½	11	—	2	2	—	—	—	5	—	2	—	—	6
M	—	—	1	—	—	—	20	6	—	—	—	—	—	3	—	—	—	—	6
N	2	—	1	—	2	—	4	—	—	4	—	2	—	4	—	—	—	—	5

The quality marked N, with the addition of 1 cocoa-nut and 1 lime sliced, yields what is considered the closest approach to a Singapore curry that can be obtained outside the tropics. Sometimes a little garlic or shalot is added to currie powders.

Cardamom is not generally liked.

In India several of the above spices are used in a fresh or green state.

Gardner's patent "Rapid" Sifter and Mixer, freely used for above. Prices, from 50/- to £100. Catalogues from Wm. Gardner & Sons, engineers, Gloucester.

For superior Curry Powders apply to Charles Cocks & Co., Reading, Berks; Allen Jeeves & Sons, Seddington, Sandy, Beds; J. A. Sharwood & Co., Ltd., St. George's House, London, E.C.—the largest dealers in the world.

Currier's Grease.—A softish fat, varying in colour from pale brown to nearly black, and smelling like leather. It is, in fact, the refuse remaining after being employed in treating leather with oil, tallow, etc., and therefore consists chiefly of tallow and fish-oil, mixed more or less with pieces and strips of leather, bits of wood, sticks, water, etc.

Used mostly by soap makers.

Cusparia. — See *Angostura Bark.*

Custard or **Sugar Apples, Atte, etc.** (sometimes spelt *Costard*).—Port., *Anonas.*

Titles applied to the delicious fruit of the *Anona reticulata*, native of Peru, and closely related to the alligator apple (*Anona palustris*). Varieties are now cultivated in most of the tropical countries of South America, Africa, East Indies, Carribbean Islands, etc., and also are commonly seen growing in a wild state in the woods near towns and villages along the sea shores of Western India.

The *Pawpaw* and *Bread-fruit* tree belong to the same genus.

It is a large greenish or dark brown roundish fruit, and from its size and shape often called *Bullock's Heart.*

But it varies in different species of the order from the size of an artichoke to that of a large pine-apple.

Its juicy pulp has, when ripe, the flavour of clotted cream and sugar.

The "Custard Apple" is a favourite fruit in Madeira, where it is in season from October to March, and when fully

ripe is most wholesome and nutritious. In Spanish-America one variety passes as the "Cherimoyer" (*Anona cherimolia*), and in the West Indies others are known as the "Soursop" (*Anona muricata*), "Sweetsop" (*Anona squamosa*).

From the old name "coster apples" was derived the term "costermonger."

Custard Powders.— These are usually compounds of corn flour, arrowroot, sago flour, or other meals, sweetened with powdered loaf sugar and flavoured with essences.

To each 4lbs. of the mixture is added about 1 oz of best powdered turmeric or saffron, to give a rich tint. The ingredients should be well dried previously, and 2 drachms each of bitter almond powder, cassia, and mace, or a few drops of the essential oils mixed well with the flour will do equally well for imparting an agreeable flavour.

Take 2lbs. of powdered gum tragacanth, 18lbs. cornflour, 4 ozs. powdered turmeric, and 2lbs. powdered sugar, essence of lemon and almonds to flavour. Rub the essences well into the sugar and then mix the whole.

The use of inferior turmeric, chrome yellow, etc., is sometimes noticeable in cheap makes. Others consist merely of sago meal coloured wtih turmeric, and flavoured with bitter almonds and cassia. The printing, advertising, and travelling are the principal items of expense.

A fair quality may also be made thus:—Dry and mix well together 8lbs. potato starch, 1lb. finely powdered gum tragacanth, a teaspoonful of finest powdered turmeric (light coloured and free as possible from smell), 10 drops of essence of lemon, and 5 drops of bitter almond oil. Keeps best, cool and dry, in closed bottles or canisters.

Special manufacturers:—De Carle & Son, Fruit Drink Works, Norwich.

Gardner's patent "Rapid" sifter and mixer freely used for above. Prices from 50s. to £10c. Catalogues from Wm. Gardner & Sons, engineers, Gloucester.

Cut Cakes.—See *Slab Cakes.*

Cut Flowers.—See *Flower and Nosegay business.*

Cut Sugar.—A shop name for loaf sugar cut or chopped into prismatic forms, generally cubes.

Cutch or **Kuth.**—See *Catechu.*

Cuttle-fish Bone. — F., *Os de Sèche;* Lat., *Os sepiae.*

This is the light and friable bone which forms the back of the cuttle-fish (*Sepia officinalis*). It was formerly much prized in medicine as an absorbent; but its chief uses now are in polishes for metals, making of pounce, and tooth powders; also for serving to cage birds to clean and sharpen their beaks (see *Poultry Foods*). Large supplies come from China, Persian Gulf, and Bombay.

Cuvee. — A French term, used in much the same way as the English nouns—"batch," "brew," etc.—but denoting wine which has been made at one fermentation, at the same time and in same *cuve* or vat, as we say "same batch," "same brew." "*Première Cuvée*" is a phrase denoting wine made from juice which voluntarily flows from the ripe grapes without pressure, and is supposed to be more luscious than the subsequent *cuvées*, which are obtained by pressing or treading the grapes.

Cwarra Wine.—One of the best Australian wines, made from the genuine juice of the grape, and somewhat resembling Rhenish wine.

D

Daffys.—An old shop term for a tincture of senna and brandy.

Dalmatian Insect Powder.—See *Insect Powder*.

Damascenes (sometimes called *Shropshire Damsons* or *Black Jack Damsons*).—A variety of smaller size and rounder form than proper damsons, and inferior in flavour.

Dammar.—A highly-valued gum, of which there are extensive deposits in Palawan and Mindanao (Philippine Islands). The exports vary from 200 to 500 tons a year.

Damsons.—F., *Prunes de Damas;* W., *Eirinen.*

These well-known small black plums are so named from the city of Damascus.

They are rather apt to disagree with delicate stomachs, and also to affect the bowels.

Besides being made into jams, jelly, damson cheese, etc., they are often preserved as bottled fruits.

Fill the bottles with fruit—not too ripe—shaking or knocking the bottom of the bottle on the table, so as to get in as many damsons as possible. Then wash off by filling up the bottles with clean cold water, shake and pour off the water and refill with cold water that has been boiled; cork well, and tie down the cork with strong twine, then place the bottles upright in a tank or large flat-bottomed pan; fill up the pan or tank with cold water, until the water nearly touches the corks, and then heat the water up to 191° Fahr., and keep it so for one hour, when the heat should be lowered to 181° for same length of time. Let them cool slowly and steadily, and remove from the pan. Afterwards, the tops of the bottles and corks should be dipped in melted wax or resin, or covered with tin-foil. Finally, polish, label, and wrap in paper, or store in a dark cool place.

Damson Cheese.—This is often miscalled Damson Jelly. It is generally made in the following manner:—1 cwt. of damsons are boiled briskly for half-an-hour in six gallons of water. When quite soft the pulp is rubbed through a fine sieve or strained through a flannel bag, and the stones thrown out. Some makers crack a few of the stones and boil the kernels along with the above to impart a more decided flavour.

Equal parts of the pulp and loaf sugar are then boiled slowly, and stirred frequently till stiff as thick treacle, or until it sets firm in a spoon. (Some use only a quarter as much sugar.)

When properly made and cold it cuts like ordinary cheese, and not like jelly.

Damson Jam.—(See aiso *Jams.*) Recipe:—15lbs. of fruit, not quite ripe, boiled with 14lbs. of sugar, will make 28lbs. of very good jam, but the best is that made in large batches, and boiled rapidly by steam.

Dandelion Coffee or **Taraxacum,** should consist of the roasted and ground roots of the common dandelion.

The word is obviously a corruption of the French name for this plant, *dent de lion* (lion's tooth), and so called from its deeply notched or tooth-shaped leaves. The Latin title is *Taraxacum dens leonis*, hence it is often called taraxacum.

The roots, which possess valuable medicinal properties, when fresh, are first washed, sliced, and dried, colour being added in the form of a little caramel, and finally mixed with ordinary coffee or chicory.

A good dandelion coffee should contain about 8 ozs. of the powdered root, 1 oz. chicory, and 3lbs. ordinary coffee, but some are made up mostly of chicory and caramel, with very little powdered dandelion; and, indeed, analysts say it is very difficult to distinguish when powdered.

The dandelion root, when fresh, is frequently a foot or more in length and half an inch or so in diameter, smooth and yellowish-brown externally, white within, breaks readily with a short fracture, and contains about 30 per cent. of milky juice. When dry the root is shrivelled to a quarter its original weight, deeply furrowed longitudinally, dark brown or brackish, breaks with a short fracture, and the exposed interior shows a yellow porous central woody axis, surrounded by a thick whitish bark with a variable number (according to its age) of irregular but well-marked concentric rings. It is inodorous and tastes bitter.

Good dandelion coffee acts as an alternative and tonic, and is good for the liver if taken once or twice a day regularly for a week every now and again.

Danish Bacon. — Although Denmark is a cold, flat, bleak country, which would disappear if the tide rose as high as it does in the Severn, yet this little country, with a population of only one-third of that of Lancashire, manages to send annually £10,000,000 worth of bacon, butter, and eggs to England. Why? Because the directed and instructed intelligence of the Danish farmer and the co-operative system beats the ignorant, conservative, and self-satisfied English farmer on his own market

About half the pork and bacon exported to England from Denmark is cured by the co-operative curing-houses of the latter country. The rearing of pigs has always been of great importance in so pronounced a dairy country as Denmark, because the dairies supply a vast quantity of food for pigs. The number of these animals reared has of late very considerably increased, owing to the enormous quantities of cheap Black Sea barley which has been imported into Denmark during the last few years, and which has been used for fodder. The bacon business has come about rather curiously. In 1890 and 1891 the number of pigs exported rose to very high figures; but in 1892, in February, the English market was closed for Danish live pigs, and although a large number were exported to other countries, this was attended with great difficulties, and there remained a large number for which no market could be found. This naturally induced farmers to export their pigs in carcases, and the co-operative curing-houses, which had already begun to be established in 1888, were greatly increased, and at the end of 1894 there were about 18 larger and smaller establishments spread over different parts of the country, the largest establishment slaughtering about 40,000 pigs a year. At the end of 1896 the numbers had increased to 18 private and 23 co-operative slaughter-houses. The principal advantage of the co-operative system was the doing away with the middleman. This advantage still exists with the co-operative curing-houses, and as a whole they are said to work well. For small cottagers it is, of course, of great importance to get a good price for their pigs, whereby they are induced to rear them. Every shareholder, without regard to the number of pigs delivered, has but one vote in the matters of the curing-house. The co-operative curing-houses are generally started in the following manner:—All the farmers and others who rear swine in a district, the radius of which if taken in a circle is about 8 to 12 miles, unite together and raise the amount necessary for the plant and starting of the curing-house by signing sureties, according to which they are responsible for the payment of a certain amount answering to about 10 kroners (1 kroner equals 1s. 1½d.) for each pig, stipulated in the bond for the delivery of swine to which reference is made below. Very often all the farmers in one parish act as a whole, so that their obligation is limited to the amount raised in the parish. These bonds of security are then deposited in the bank

in which the loan necessary for building the curing-house is raised. The rules of the curing-house generally stipulate that the said loan shall be paid off in ten years, after which period the curing-house is owned by the shareholders in proportion to the number of swine delivered. The obligation to be surety is very binding, and generally lasts for a period of ten years, and very detailed and strict regulations are made respecting the transfer of the obligation to others.

The participants further bind themselves to deliver *all* the swine they rear to the curing-house, and severe fines are imposed for any swine sold to others. The shareholders are as a rule bound to deliver swine at the curing-house or at the nearest railway station, whence they are taken to the curing-house at the expense of the establishment. Settlement is made according to dead weight, the swine being divided into three different classes when slaughtered. Payment is generally made within eight days of the delivery, with the deduction of 1 kroner per 100lbs. The amount thus retained is used for different purposes, *e.g.*, to collect a reserve fund. At some of the curing-houses three-fourths of the value of the swine are advanced to the farmer on delivery, according to the prices for live swine. The prices paid for the swine are fixed in the following manner. In every curing-house there is a Quotation Committee, generally consisting of the manager, the chairman, and a shareholder. These committees fix on a proposal, which is then sent to the Central Quotation Committee, at Horsens (Jutland), where the final quotation is fixed. At every curing-house there is a shop for the sale of sausages, fat, etc., and as a rule these pay exceedingly well, and form a great part of the profit of the curing-houses. The pigs are crosses with Danish and the large and medium white Yorkshire breeds, and are fed to be killed at five or six months old.

In 1883 the total export of bacon from Denmark was only 9,121 tons, but for 1894 it amounted to 41,225 tons and the increase still went on. In 1896 the number of pigs slaughtered exceeded 1,200,000, an increase of 25 per cent. over 1895.

In 1897 the United Kingdom alone received 51,327 tons.
" 1898 " " " 50,876 "
" 1899 " " " 60,530 "

The special brands are *The "Royal Crown"* and *The "Royal Dane,"* imported by George Wall & Co., Ltd., Liverpool (see advt., page 10).

Danish Butter.—The manufacture of Danish butter has shown a marked development during the last 30 years. About 60,000 tons are now exported yearly. As in the case of bacon, this progress is due to the highly-trained intelligence, resourcefulness, adaptability, energy, and enterprise of Danish farmers, the power of organisation, and the effectiveness of Government expert advice and support. It was brought about in the first instance by operatives from Holstein, who first began to use the thermometer, the scale, the burette, with other improvements into the dairies of that country.

In the manufacture of butter both refrigeration and pasteurisation are employed. The pasteurising process is a very simple one, and is designed with a view to the destruction of certain germs or spores which exist in fresh milk. The milk is received in the receiving tanks from the farmers, and as it is taken into the dairy samples are taken to be tested afterwards by butterometer or other handy means for butter fat. The milk is then run through the pasteuriser. This is a very simple device, consisting of a jacketed pan, inside of which there are fixed beaters or agitators, so as to quickly bring the milk in contact with the heated surface of the pan. The milk flows in by gravitation, and the centrifugal force exerted by the beaters forces its elevation high enough to enable it to flow into the separators.

Here it is at once separated, and the cream is collected and cooled by means of Schwarz pans, or better, by passing over the capillary surface of a circular or flat cooler, in which chilled water is running or brine is being circulated.

This cooling of the cream is a very important matter, as the quicker it is cooled, to say 55° F., the sooner is the ripening begun and the butter produced. The butter is stiffened in the chill rooms before being sent out generally at a temperature of 35° Fahr.

Although it is made every day, it is not sent away from the dairies generally but once a week, so that it follows that some of the butter when sent away from the dairy is a week old. It is generally sent in the beginning of the week to the exporter to be shipped at the end of the week, and in this way it comes into the market at the beginning of the next week. It is obvious, therefore, that to efficiently conduct the dairy business requires considerable capital.

The Danes make fresh butter all the year round. They manage to have milch cows coming in all winter as well as summer. Some think that the pasteurisation process, while removing any bad taints from milk, cream, and butter, also at same time destroys much of the fine flavour; and although the butter is mild, more uniform in quality, and will keep a longer time, it lacks the best traits of other fresh butter, and is apt to acquire an oily taste. Of course, other butters—such as Irish, which have been preserved or cured with borax, etc.—will keep longer, but the only preservative added by the Danes is about 1 per cent. of salt.

There are two kinds of Danish butter —*sweet butter* (södt smör), made from the cream which is collected as soon as it rises, and *sour butter* (syrnet smör), made with cream that has been allowed to sour a little.

This latter kind is much more delicate, and is mostly exported.

The churn used is conical shaped with a vertical axis, containing in the interior three churns placed vertically, to arrest the gyratory movement of the cream.

Danish butter is not graded; only the finest or freshest is professed to be shipped. When any grows stale, of course, it is for any seller to describe it as he pleases, but to call it fresh would be fraudulent. It is doubtful whether the Danish system would work well in England under present conditions, and where milk fetches 6d. or 7d. a gallon. It takes 2½ or 3 gallons of milk to make a pound of butter, so that as things are the English farmer would have to submit to a loss of about 30 per cent. on the market price of the milk.

The butter when made is packed in little beechwood barrels or kegs, containing 14, 28, or 36 kilogrammes, and the brand must be burnt in every package.

DANISH BUTTER PRICES.

reduced to Danish currency pr. 100 pounds at the exchange of £1 = Kr. 18.10 (90 ore = 1/-).

Price per cwt. in shillings.	in Danish. Kr.	Ore.	Price per cwt. in shillings.	in Danish. Kr.	Ore.
81	71	87	111	98	48
82	72	75	112	99	37
83	73	64	113	100	26
84	74	53	114	101	15
85	75	42	115	102	03
86	76	30	116	102	92
87	77	19	117	103	81
88	78	08	118	104	70
89	78	97	119	105	58
90	79	85	120	106	47
91	80	74	121	107	36
92	81	63	122	108	25
93	82	51	123	109	13
94	83	40	124	110	02
95	84	29	125	110	91
96	85	18	126	111	79
97	86	06	127	112	68
98	86	95	128	113	57
99	87	84	129	114	46
100	88	73	130	115	34
101	89	61	131	116	23
102	90	50	132	117	12
103	91	39	133	118	00
104	92	27	134	118	89
105	93	16	135	119	78
106	94	05	136	120	67
107	94	94	137	121	55
108	95	82	138	122	44
109	96	71	139	123	33
110	97	60	140	124	21

The Danish "pund" is equal to half a kilogramme or 1.102 lbs. (avoirdupois).
112 lbs. English calculated equal to 102 punds Danish.

It should be understood that not all the butter from Denmark is real Danish. Much of it is first imported into Denmark from Sweden, Finland, Siberia, etc., and it is said that some unprincipled parties refill Danish butter casks with foreign mixtures or margarines.

Leading importers of Danish butter. —Geo. Wall & Co., Ltd., Fennel Street, Manchester, and Liverpool (see advt., page 10); Thomas Wilson & Co., 3 Hood Street, Liverpool.

Dari, or Daly Seed. —(Also known by the African names of *Durra*, *Dhurra*, or *Dourrah*.)—These are several names for the seed, or coarse meal, yielded by the sorghum (*Sorghum Vulgare*), or Chinese sugar cane, *Virola sebifera*, extensively cultivated and used as food in Egypt, Africa, and India.

During the Soudan war our soldiers were largely indebted to it for food. (See also *Millet*.)

The seeds are round, whitish in colour, and somewhat larger than mustard seed. An excellent wax for the manufacture of candles is also obtained from it; but the seed imported into England is chiefly used for bird, game, and poultry food, and the rigid stalks for brooms and whisks.

Dates. — F., *Dattes;* G., *Datteln;* It., *Datteri;* Sp., *Datiles.*

The fruit of the common or greater date palm, *Phœnix dactylifera*, which now forms an important object of cultivation in Africa, India, Brazil, Arabia, Persia, Barbary, and Spain. It is, however, only in Northern Africa, Morocco, Algeria, and Tunis, under the hot and dry sky of the desert regions, or of those which are not distant, that the more edible varieties grow in profusion. The dates which grow in the environs even of Algiers, at Dakar, St. Louis (Senegal), and at Rio de Janeiro are not so good, because they grow in relatively moist climates, whilst the fruits coming from the oasis of Central Sahara and Tunis have a delicacy of taste not met with elsewhere, particularly the "Degla" and "Horra," packed in small boxes.

These fruits are large, tender, and very sweet, of a golden brown colour, and with the skins unwrinkled. They are grown chiefly in the famous forests of Jerid (Djereed) and Tuzear, but in the north of Tunis dates do not ripen well for want of heat.

There are scores of varieties, among which the *dakkar* or *menakkar* (male date) is pre-eminent. Probably no other fruit combines in such a convenient form the principal elements for the sustenance of human life as the date, and this without cooking or preparation of any kind.

The naked and cylindrical stem of the tree generally grows straight to 40 or 50 feet high, and at the top opens out a large cluster of 40 to 80 feather-shaped leaves, each 8 to 10 feet long, and amongst which some 400 or 500 lbs. of fruit hangs, in bunches of 20 to 30 lbs. each.

The trees do not bear fruit until 8 or 10 years old, but live to more than 100 years. They require great heat—not less than 100° F.—and will not flourish within 25 miles of the sea.

The ordinary date fruit is an oblong drupe, shaped like an acorn, but twice as large, and consisting of a coarse, but sweet and rich pulp, covered with a thin yellow skin. In the centre is a single, hard, horny seed or kernel, which has a deep groove on one side and running its whole length.

In spite of their sweetness, dates do not cloy the palate like other fruits, and as a sweetmeat for children they are considered excellent. In this country the consumption has quadrupled in a very short time.

The date tree is perhaps one of the most useful in the world. The Arabs say it loves to have its feet in the water and its head in the fire. Its fruit was the lotos of the *Lotophagi*, or lotos eaters. In North Africa and Arabia the

trees are preserved as family estates, and handed down as dowries. The trunk supplies timber for houses and fences, and wood for fuel; the leaves form baskets, bags, mats, fans, brushes, walking-sticks, ropes, cords, roofs, and walls, and the fruit the chief food to millions of people in Arabia, Barbary, etc. Spirits, sugar, honey, and vinegar are also made from it. A liquor, known as palm wine or *latchby*, is obtained from the sap of the date tree. Even the young shoots and the tender unfolded leaves are also eaten as *palm cabbage*, while oil, "date coffee," and cattle food are made from the stones. "Arrack" is also made from the sap of the shoots.

The best dates, however, as already stated, are brought from Africa, by way of Tunis, and include those of Tafilat, a very tender and sugary kind but limited in quantity, grown 200 or 300 miles inland of Morocco, a part to which a European has rarely penetrated.

The *Tafilat dates* used to be packed in large cases of 1½ cwts., but now come in small clean fancy boxes, and are very delicious.

Immense quantities of dates come from Smyrna, Barbary, and Alexandria, and the Egyptian fruits are much larger and very luscious when new, but are very fibrous and soon go hard.

The plantations in Algeria are of immense area. The chief are those in Souf. Nearly every green and fertile spot in the desert which owes its existence to a water spring is known as an "*oasis*," and is planted with date palms. The oasis of Touggourt possesses 400,000, and forms a long band some 15 miles in extent; at Toyer there are 250,000 trees; in the oasis of El Hamma, 200,000; in the territory of Gafsa, oasis of Ouden, 200,000; and in the Nefzarouen plantations in Tunis, 300,000.

The popular methods of preserving dates are either drying them in clusters before they are too ripe, and then arranging them in small ornamental boxes, or cartoons, which are exported 50 or 100 in a case, or, which is the older system, leaving the dates on the tree till quite ripe, and then pressing them into a solid mass, "djoue," or cake in baskets or bags. These are called *Squashed dates*, but box-packed dates are now much preferred, and the demand for skin or basket-packed is becoming neglected.

Bassorah or *Bagdad Dates*.—There are some excellent varieties grown in the provinces of Turkish Arabia, near the Persian Gulf—in fact, the trade of Bassorah, Basra, or Basrah, on the Tigris, consists almost entirely of dates. Formerly they came in mats, baskets, and skins only, but now they arrive neatly laid in clean whitewood cases of about 63lbs. net and in small cardboard boxes.

The principal are the *Hallawee* (a golden fruit with a delicate flavour of honey), the *Khadrowee* (a red or brown fleshy fruit of firm consistency), the *Sayer* or *Sair* (a dark sweet fruit, the wild date of the country), the *Deri* (very scarce, with a delicate raspberry flavour), the *Koorsi*, from Bagdad (a bright golden fruit), and the *Zahdi* (a similar fruit of rather redder hue).

The Bussorah and Bagdad date business is now almost wholly in the hands of four or five British firms.

White Dates.—A small white variety from Egypt, about the size of acorns and nearly as smooth.

Trebizonde Dates, the fruit of *Elæagnus Orientalis*, are popularly used in the East as dessert, and for making a sort of sherbet; but Persian dates are not equal to those grown and shipped at Bussorah, although they are still sufficiently appreciated to secure a steady demand. Date palms in Persian Beloochistan begin to yield at three years. A good crop for a single tree is 80 to 100lbs. The dates used for export are those that grow at the summit of the tree. From the action of the sun they become hard and dry, thus being easily packed. The fruit on the lower branches remains soft, and is kept for local consumption.

It is said that nineteen-twentieths of the population of Fezzan live on dates

during nine months of the year, as also the animals, and that the first question of a Bedouin is, "What is the price of dates at Mecca?"

French dates are not fit to eat, containing, as they usually do, the eggs and excreta of insects.

The wild date tree, *Phœnix sylvestris*, grows all over India. The fruits are very small and almost pulpless, but the natives eat them, although the principal use made of the tree is for extracting its sap for "toddy" making and in Bengal for "*date* sugar" making. There are as many varieties of dates as of apples. While in their unripe state they assume a red or yellow shade, and are then crisp like apples. At first astringent, they then become sweet and nutty. In this stage the natives in the Persian Gulf eat largely of the fruit, also preserve it by boiling it in water and drying it in the sun, when it will keep for a year. Certain varieties of dates do not ripen beyond this, the "Khárák" stage, and can only, therefore, be preserved by the boiling and drying process; while other varieties ripen till soft and perfectly sweet. This is in Persia called the "Khoorma" state. These will not keep good more than two or three days unless dried in the sun. Usually the dates are gathered as they ripen by shaking the tree. It is only certain kinds that can be left on the tree to ripen in bunches.

Dates keep best when closely packed so as to exclude the air, and when in parallel layers are easily broken out for use; but the stickiness of the fruit is such that shop assistants need to wash their hands afresh every time loose dates are handled, so that the 1lb. boxes are preferable in this respect. If packed in an unripe condition they are almost useless. They should be chosen large, soft, plump, and of a yellow or light reddish colour outside, but whitish towards the kernel, flesh solid, juicy, and viscous, and of a sweet vinous taste.

Dry, hard, and wrinkled qualities are very inferior but they are now largely used in distillation and in the manufacture of vinegar. Low priced dates are apt to be affected with a parasitic disease known as the *date-smut;* it occurs in the interior of the fruit, and converts it gradually into a sooty mass. The parasites being very reproductive, they rapidly make the fruit quite unsaleable.

For all kinds of dates, apply to Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool.

Date Coffee.—A preparation made from torrified dates and mixed with coffee, in the proportion of about one-fourth coffee and three-fourths dates. It is a dark-brown, rather sticky powder, having a sweetish smell, but no coffee odour. On being thrown into water, the water is immediately coloured, as the powder sinks to the bottom. There is scarcely any trace of caffeine, but the large amount of sugar present clearly distinguishes it from genuine coffee.

For the laws and regulations regarding Date Coffee, etc., see *Imitation Coffees.*

Date Plums.—See *Kaki.*

Date Sugar.—See *Palm Sugars.*

Date Vinegar.—As the name implies, this is produced from dates. The dates are first stoned and then mixed with water. The water dissolves out the sugar and other soluble constituents of the fruit, producing a liquid from 9° to 1° B. The wine is next filtered, and then acetified in casks by a quick process.

Finally, it is sterilised and clarified.

Date vinegar possesses the properties of ordinary wine vinegar, but differs from the latter in being much stronger and containing less alcohol, the strength varying from 6° to 8°. It is also much cheaper in price.

Dehesa Raisins. — Retailers have doubtless often seen upon boxes containing Malaga raisins the word "Dehesa," and may have wondered what it really meant. No "Dehesa" is to be found upon the map—the gazetteer is silent about it, and the dictionary gives no clue!

Now the word "Dehesa" simply means a *pound*—not a sovereign, nor even a pound avoirdupois, but a pound

or penfold for stray animals, such as are common in nearly every English village, except that the Spanish variety is larger.

Well, some years ago it seems one of these "dehesas," or pounds, having outlived its usefulness, was accordingly sold to an enterprising senor, who converted it into a vineyard. Its long occupation by sundry oxen, pigs, sheep, and mules, to say nothing of the luckless jackasses that abound in every part of Iberia, had given its soil an unusual richness, and the result was a crop of grapes of immense size, from which the largest and finest raisins were made. So the lucky senor adopted the name for his fruit, until "Dehesa" raisins have become known wherever plum-puddings are eaten. We will not say that all the Dehesa raisins in the market came from these pounds, for this would be expecting too much even of high-toned *caballeros*, but there is little doubt of the origin of the word in this connection.

Dehesas are very apt to be closely packed and made very pretty at the top, although in the under layers they have often been little short of a fraud. Very few, however, are now met with; and the Muscatels, or dessert raisins, from Malaga (which come in brightly decorated boxes) have nearly driven out of the market the Dehesa variety.

Dehydrated Fruits and Vegetables.—In addition to Dried and Evaporated Fruits, we now have sliced dehydrated fruits—such as apples, pears, and apricots—which in a dry form can be closely packed, will last long, and on being soaked in water regain their natural physical characters, as well as their original flavours. This perfection is attained by the careful selection of fruit, and judicious drying in closed but ventilated appliances. What has been done with fruit is now being done with vegetables. At the present time vegetable garden produce is being preserved in England mostly by the simple process of dehydration. This has been carried so far and so successfully that even beetroot in thin slices can be dried hard, yet retaining all its characteristics, including colour, and when these slices are soaked in pale malt vinegar they swell, become tender, and impart a bright red tint to the liquor. It is to be noted that the process is merely one of systematised preparation and drying, no chemicals are used, and yet flavour and colour are absolutely retained. It is clear enough that this improved system of drying has many advantages over some other methods of preserving foods. There is reduction of bulk, lessening of, and when properly packed, complete safeguard against, the dangers of fermentation, and the exclusion of all added chemical antiseptics, which, as commonly used with fresh or bottle fruits, must have a more or less decided influence on digestion. Moreover, these dried vegetables and fruits can be quickly prepared for consumption, and can be kept for travelling, or for storage against seasons of scarcity, with far greater ease and sense of security than edibles put up in glass or tin. In more than one direction this improvement in desiccation has been applied to flesh foods with some amount of success. Indeed, as regards the drying of eggs the process proves of the highest excellence and utility. The dried eggs, in powder or small oval pellets, have merely to be soaked in a little water, when they can be beaten up and used for every description of culinary work with absolutely satisfactory results. Considering the reliance that one must place in eggs in invalid dietaries, and the unreliability of their supplies under various circumstances, this victory of the manufacturers is a veritable boon. A welcome feature in this new phase of food preserving is that the provisions are generally of home growth and British manufacture, and will thus prove a help to the farmer as well as to the consumer.

Delicatessen.—A German term for dainties, or the superior confections sold by grocers.

Demerara Sugar.—A name originally given to cane sugar grown and shipped from British Guiana, but now commercially extended to all crystallised

sugars from that quarter, including Guiana, Honduras, Jamaica, Trinidad, St. Kitts, St. Lucia, Barbadoes, and other British West India Islands. These rich cane sugars are all very much alike and about the same in value. There is no denying the fact that they are really cheaper and better in every way than beet sugars, but beet sugars being whiter and about a halfpenny per pound lower in price, silly housewives get the beet. The grocer might do well to remind customers occasionally that *sixpenny-worth* of Demerara is much richer, sweeter, and more wholesome in every way than *nine pennyworth* of beet.

Demerara sugar is imitated by certain refiners, or rather sugar dyers, who have special machinery for colouring the larger crystals of beet sugar with "Nicholson's blue" (iriphenyl rosanaline sulphonic acid), or other aniline dyes of amber tint, in order that these foreign beet crystals may be palmed off on the public as genuine Demerara, and consumers cheated out of about ½d. per lb. This spurious product is usually harmless, but in the manufacture of some of them *stannous chloride* is employed in the vacuum pans, it having largely superseded sulphuric acid for this purpose; the chloride, however, passing into the molasses, becomes a very objectionable constituent of that product.

One thing is, however, certain, the reputation of Demerara has from above causes greatly declined; and unless the public analysts intervene, it seems likely to go entirely out of the market. A few retailers still stock the lower qualities, but very few now keep the best.

The sale of artificially coloured "Yellow Crystals," when Demerara is asked for, is, of course, under the Merchandise Marks Act, a fraud on the consumers, as also upon the cane sugar producers.

Genuine Demerara derives its yellow, lemon, or golden colour naturally from the cane juice, and is not coloured with any artificial dye; although in the last stage of refining it a little chloride of zinc is generally employed to impart a bright complexion or "bloom." Owing to its peculiar rich flavour, Demerara sugar is not suitable for jam or marmalade making until highly refined.

In its original state or first stage in the process of refining, where it is made prior to shipment, crystallised Demerara sugar is always white, and it is straw-coloured or rendered yellow only to suit the fancy and please the eye of the British consumer; consequently, "pure white Demerara" is very rarely seen in this country.

A very simple but infallible test for genuine Demerara is to put a spoonful of the suspected sugar in a tumbler of water, if it turns the water a CLEAR yellow and leaves the sugar quite white, it is a proof of artificial colouring; but genuine Demerara merely turns the water *cloudy*, but without colouring it; however, the smell is generally sufficient.

Special Importers.—The Pure Cane Sugar Co. (J. Philip & Co., agents), 4 Fenchurch Buildings, London, E.C.; Graham Brothers & Hay, 16 Stanley Street, Liverpool.

Demi-Suisse Cheese.—See *Gervais*.

Dendang.—(See also *Charqui*.)—A name for dried meat in the Eastern Archipelago. It usually consists of the flesh and sinews of the buffalo, deer, or wild hog, dried quite hard by exposure to the heat of the burning sun.

Denia Raisins.—See *Raisins*.

Dentifrices.—Powders or other substances used for cleaning the teeth. Often made by burning and powdering fish shells, which when so treated acquire a caustic nature.

The term used to be confined to powders, but is now also applied to liquid preparations intended for the same purpose.

A good dentifrice should contain an antiseptic to kill bacteria and check fermentation which is constantly arising in the mouth from many causes. Tartar is injurious to the teeth, and should be moved by mechanical means.

Deodorisers (for bad smells).—These preparations are not necessarily disin-

fectants (which see), but are intended for overpowering or neutralising bad smells, especially those resulting from impurities, but they do not kill infectious germs.

Chlorine, chloride of zinc, nitrate of lead, and solutions of borax, are all employed for this purpose. Offensive matter may also be deprived of odour by burning acetic acid, vinegar, camphor, fragrant pastilles, cascarilla, brown paper, etc.; but they do not disinfect nor destroy contagion. These merely hide, cover, or disguise putrescent odour.

Derbyshire Cheese. — A small, white, and rich buttery variety, like Dunlop cheese, and made in very much the same way as Cheddar and Cheshire, but the salt is applied externally.

It mostly goes to the London market. One variety is shaped like Gouda cheese, and known as "Derby Goudas."

These latter were first made at a factory started by the Duke of Devonshire at Derby and Longford in the sixties.

Desiccated Coker (or Cocoa) Nut. —The white fleshy part of the coker-nut (sometimes spelt koker), *Cocos nucifera*, sliced or ground, and deprived of all humidity by evaporation.

The nuts are first broken and the kernels removed, and then passed to a peeling machine, where the skins are taken neatly off. The skinned nuts are next washed in barrels, and are cut or shred according to the class of product required. If shred, the mass is dried thoroughly in hot revolving pans, and thus acquires its desiccated condition.

It arrives from Ceylon and the United States in lead-lined cases of about 1 cwt. each.

The whiter it is the better; the yellow or brownish is considered discoloured, and brings a lower price, although for many uses it is quite as good.

It is sold sweetened and unsweetened; present value, 30/- to 35/- per cwt., according to grade. Grocers and confectioners should buy it unsweetened, and add the sugar themselves if necessary, sugar being only about half the price of the coker-nut.

Special Manufacturers.—M. E. Holdsworth, 3 Norfolk Street, Bradford; John May, 114 Church Street, Croydon, makes large handsome packets to sell at 4½d.; J. H. Vavasseur & Co., 13 St. Swithin's Lane, London, E.C.

Desiccated Fruits. — See *Evaporated* or *Dried Fruits, Vegetables*, etc.

Detergents.—(See also *Deodorisers* and *Disinfectants.*)—These consist of lotions, ointments, powders, and medicinal preparations for cleansing or purging away offensive matters, either internal or external.

Devilled Ham, etc. — "Devilled" means boiled, and highly seasoned with hot spices, such as mustard, pepper, cayenne, etc.

Hence we have devilled chicken, turkey, etc., etc.

Devonshire Cider.—See *Cider.*

Devonshire Clotted Cream.—See *Clotted Cream.*

Devonshire White Ale.—(See also *Ales.*)—This curious beer was invented at Plymouth about the year 1680. There being at that time very few cellars in that town on account of its stony foundation, it was generally fermented or worked in the back premises of the publican. The fermenting stuff was a secret preparation, called "Ripening" by its vendors, but was supposed to be a mixture of malt, flour, yeast, and white of egg. A lump of this converted the wort from a very clear body into a thick fermenting one, looking and tasting like milk. A barrel is, however, easily prepared by slowly boiling pale ale-wort with 6 ozs. hops and 12lbs. crushed oats. The liquor, when strained and cooled to about 60° F., is fermented by the addition of two good pints of yeast, and as soon as the fermentation is at its height, the liquor is bunged up in casks, or bottled and wired.

This ale is now drunk only in some parts of that county.

Dewberries.—See *Brambles.*

Dextrine or **British Gum.**—G. *Stärkegummi*; It. and Sp. *Destrina.*

(Also known as *Alsace*, *Artificial*, or *Starch Gum.*)

A gum-like substance, mostly obtained from potatoes or potato starch, but also from wheat and maize, by roasting these until they become brown, and mixing with weak nitric acid.

It is easily produced by heating to the temperature of 320° F. starch which has been moistened with a small quantity of nitric acid. (A further fermentation of this starch would turn it into glucose.)

Dextrine is soluble in cold water, and besides being employed as a stiffening substance by calico printers, crape and muslin manufacturers, etc., in lieu of the more expensive natural gums, it is extensively used on postage and revenue stamps, envelopes, etc.

Postage stamp gum may be prepared as follows:—4 ozs. dextrine, 7 fluid ozs. water, 1 oz. acetic acid, and 1 oz. alcohol. Add the acetic acid to the water, bring to a boil, and then dissolve in it the dextrine. Remove the vessel from the fire, and, when cool, pour in the alcohol. A little glycerine is also often used, to prevent the paper curling.

Dextrose is a hard grape sugar, a solid product first discovered in grapes by Lowitz in 1792, hence its name of *grape sugar;* then in 1811 a similar kind, but softer, was found also in starch by Kirchoff, and this was called *starch sugar*, or glucose; and in 1819 Bracounot was able to prepare another from woody fibre.

This saccharine substance is easily obtained by the conversion of farinas or starches into a semi-fluid state by extreme heat and the action of acids, vitriol, etc.

The actual saccharine or sweetening property is really the same whether obtained from grapes and other fruits, grain or starch, potatoes, wood or sawdust, or cotton or linen rags; for they all contain the elements necessary—carbon, oxygen, and hydrogen—the proportions only requiring to be chemically adjusted by acids.

In its hard state it is called dextrose, or grape sugar; and glucose, or starch sugar, when soft.

Dhal.—A name in India for Pigeon peas (*Cajanus Indicus*), one of the best and most nourishing of Indian pulses. It is eaten in various ways, but is most popular as a sort of thick pea-soup poured over boiled rice.

Dhurra, Dourrah, or **Durra**—See *Dari* and *Millet Seed.*

Diatomite.—See *Kieselguhr.*

Digby Chicks.—A conventional name for the smoked herrings cured and exported from the town of Digby, in Nova Scotia, Canada. A large amount of business is also done at Digby in Finnan Haddies, Lobsters, and Dulse.

Dika or Odika Bread.—F. *Pain de dika* (sometimes called *Gaboon Chocolate*).

This is made in the West African forests from the seeds (*oba*) of the ibo tree (*Irvingia Carteri*). The plums are gathered, as they fall from the tree, into large heaps, where they remain until the outside has putrefied; then the stones are cracked, and the kernels or almonds taken out and smoked for some days. Next they are put into a large mortar to be crushed and agglomerated into a homogeneous mass, weighing 10 or 12lbs. This is exposed to the rays of the sun, which causes the fatty portion (like *Cacao butter*) to melt and separate. It is somewhat darker in colour than Palm oil and of about the same consistence. The flavour resembles that of cocoa, and it is very suitable for confectionery purposes. Dika is generally moulded into cakes; it will keep good for six months, and the natives of the Cameroons eat it as a flavouring ingredient. (See also *Owala-seed.*)

Dill.—*Dill-Seed.*—F. *Fruits d'Aneth;* G. *Dillenfrüchte.*

The seed or fruit of *Anethum graveolens*, or garden dill. It is used by the Cossacks as a condiment, and in England it is sometimes employed to heighten the flavour of soups and pickles, especially cucumbers.

The English and Indian dill fruits are the growths usually met with in this

country, and the German is exactly like the English, the two mericarps being usually separated from the pedical, each of them being oval and about ⅛ inch long and ⅛ to 1·10 inch broad, a decided brown in colour, the dorsal ridges being inconspicuous, but the lateral much prolonged into the form of wings. In the Indian, which is mostly used, those lateral ridges are not so prolonged, and the colour of the fruits is a paler brown, the mericarps being usually not divided. The English is richest in oil.

Dill-water is a favourite remedy of nurses to promote the secretion of milk, and to relieve flatulence and griping in infants.

Dingaan Apricots.—See *Apples.*

Dip Candles.—(See also *Candles.*)—Tallow *dips* were originally introduced as an improvement upon the simple *rush-light.* The wicks, made of loosely twisted cotton yarn, are stretched separately in a frame made to hold several wicks, and when these are all attached, the frame is simply *dipped* three or four times into a trough, or vat, of melted tallow, and then left to harden.

After repeating the process a few times the candles assume the requisite thickness, which is usually determined by weighing, but "a dozen of dips" seldom weighs more than about 11½lbs.

The chief objection to "dips" is—(1) The low melting point of the tallow and its oily nature; (2) the irritating fumes produced, and which are due to the glycerine in the tallow being decomposed and yielding acrolein. Dips have now been largely superseded by *Mould* candles.

Disinfectants. — F. *Desinfectants;* G. *Desinficirungs-mittel;* It. *Disinfettanti;* Sp. *Desinfectantes.* (See also *Antiseptics, Deodorisers,* and *Detergents.*)

Preparations intended to absorb, neutralise, destroy, or remove the contagion or germs of infectious diseases, offensive, fœtid, or putrescent effluvia, miasmata, or other specific contagia. They comprise:—

(1) Volatile Gases or Vapours, such as oxygen, ozone, chlorines, bromines, iodines, and other halogens; also the fumes of sulphur, nitre, camphor, hop-oil, rue, rosemary, camomile, etc.

(2) Liquids and Solids—All soluble chlorides, sulphates, sulphites, some acetates (iron, etc.), some nitrates (potash, soda, etc.), strong acids, and alkaline solutions.

The principal disinfectants consist of chlorides of lime, soda, and zinc, carbolic acid, peat charcoal, mercuric chloride, heat, sulphur dioxide, iron protosulphate, etc.

A disinfectant may be also a deodorant, but it is not every deodorant that is a disinfectant. It does not suffice that a disinfectant should possess a pleasant odour, powerful enough to disguise, overcome, or neutralise a noxious odour, but it should be an actual germicide, destroying the germs that give rise to the bad smell.

Chlorines and soda preparations with ventilation are considered best for disinfecting the air. A good and cheap one is made by dissolving half a drachm of nitrate of lead in a pint of boiling water, then dissolve two drachms of common salt in eight or ten quarts of water. When both are thoroughly dissolved pour them together, and when the sediment has settled there is a pail of clear fluid, which is the saturated solution of chloride of lead. A cloth saturated with this liquid and hung up in a room will at once sweeten a fetid atmosphere; poured down a sink, water-closet, or drain, or on any decaying or offensive object, it will produce the same result. The nitrate of lead is very cheap, and a pound of it will make several barrels of the disinfectant.

Steam or stove heat is often used for dirty clothes in some of our workhouses and hospitals. Quick-lime or whiting are useful for covering walls; sulphates of iron or lime, chloride of lime or soda for cesspools.

Dr. W. Burnett's Disinfecting Fluid seems like a neutral solution of zinc in commercial muriatic acid.

Sanitas is largely produced from Russian turpentine.

Collins's Disinfecting Powder is thought to be composed of two parts of dry chloride of lime with one part of burnt alum, and is used with or without water to purify rooms, cesspools, etc.

Douglas's Disinfecting Powder is said to be sulphate of calcium mixed with chalk and carbolic acid.

Another kind is made from, say, 40 ozs. freshly slaked carbonate of lime, 2 ozs. marble dust or fine sand, and 3 drachms of carbolic acid crystals. The acid and dust or sand are first mixed together, and then with the other ingredients.

Special Firms.—Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool; F. Newbery & Sons, 27 and 28 Charterhouse Square, London, E.C.; Paton, Calvert & Co., Leeds Street, Liverpool (see *Paton's "Cleanall" Powder*).

Distemper or **Destemper.**—Colours ground up with size, gum, or white of egg, and water. (See also *Water Paints.*) Used for scene painting, also for colouring walls, woodwork, etc.

Distilled Vinegar.—(See also *Vinegar.*)—Distilled vinegar is commonly manufactured from ordinary brown vinegar, by subjecting the latter to the process of distillation. Earthenware stills, heated by steam jackets, are largely employed for this purpose. The water, acetic acid, and other volatile and flavouring bodies throw over, and are condensed in coiled tubes lying in water. The vinegar thus obtained is water-white and perfectly clear. It usually lacks flavour, and, if the distillation be carried too far, acquires an unpleasant odour and taste. The distilled vinegar is also somewhat weaker than the original vinegar used in the still. Distilled vinegar is free from nitrogen, sugar, and solid bodies. It is sometimes produced from "white wine vinegar," and is then of whiter colour.

But much of the "distilled vinegar" sold by druggists is merely acetic acid and water. There is really no fixed standard as to what vinegar itself should consist of.

Turner's "Chemistry," 4th edition, 1833, says: "The distilled vinegar which is now generally employed for chemical purposes is prepared by the distillation of wood."

Tomlinson's Cyclopædia (1854) says: "A pure variety, called 'distilled vinegar,' was formerly produced by distilling common vinegar, a plan now almost entirely superseded by mixing pure acetic acid with water."

In *Roscoe and Schorlemmer's "Treatise on Chemistry,"* vol. 3, page 484, the authors say: "Glauber in 1648 states that acetic acid is '*acetum lignorum,*'" and "by rectification it may be made as good as '*acetum vini.*'"

Durande, in 1777, also calls strong acetic acid "vinaigre glacial."

Food inspectors and some analysts have lately sought to restrict the term vinegar according to their own ideas, and that in a very illogical way, for it is very difficult to affix a strict scientific definition to a name which has so long been in use to cover such a varied ground as the word "vinegar."

Ditalini.—A variety of Italian paste in the form of thick pipes, cut diagonally, two to four inches long, and often artificially coloured yellow. (See *Italian Paste.*)

Divi-divi, or **Libi-dibi.**—The native and commercial name for the pods of the South American plant *Cæsalpinia coriaria.* The pods as imported are about two inches long by three-quarters of an inch broad, of a brownish colour, and curled up like some pea-pods.

The seeds seem valueless, but the husk contains a bright yellow resin of remarkable astringency, and of great use in tanning. Immense quantities grow wild in the Rio Hacha Plain, Bogota, Colombia. Some 4,000 tons are gathered and exported, but as many more are left on the ground to rot.

Dodder Cake.—A kind of oil-cake or cattle food, manufactured in Lübeck from the *marc* or skins of the seed of the *Camelina sativa.*

Dog Biscuits.—The principal ingredients are animal offal and other refuse.

Dog Soaps.—Generally made by mixing Stockholm tar with ordinary melted soap, the tar being first dissolved in wood naphtha.

Dogwood Oil.—An oil obtained from the berries of *Cornus sanguinea*, in certain parts of Europe and Asia.

Useful for lamps, soaps, etc., and when properly refined, for culinary purposes.

Doncaster Butter Scotch.—A superior kind of pale brown toffee, generally made by boiling over a slow fire the following or similar proportions:—Say 6lbs. best cane sugar in a pint of water and ½ oz. cream of tartar; when it comes to the boil 2lbs. of butter are added, and the boiling continued until enough.

This is known by dipping a knife or steel—first into the boiling sugar and then into cold water; if the sugar which adheres to the steel is *crisp* and can be crunched without sticking much to the teeth, it is done; but if it be soft and sticky it wants boiling longer.

When enough, it is poured into small moulds, well greased with butter or slab-oil, and afterwards, when cold, it may be turned out, wrapped in wax-paper, tin-foil, or otherwise kept as near air-tight as possible.

Doodoe Nuts.—See *Candle Nuts.*

Doorn Tea.—An African beverage, having emollient and expectorant qualities, and is made from the leaves of *Cliffortia ilicifolia.*

Doppel Kummel.—See *Kummel.*

Dorsetshire or **Blue Veiny Cheese**—So called from its blue-veined appearance. It is made entirely from skimmed milk and not so rich, but otherwise compares well with *Stilton.*

Draff.—See *Brewers' Grains.*

Dragees or **Sugared Almonds.**—(See also *Comfits.*)—French sweetmeats, consisting of almonds or filbert kernels covered with a thin coating of white or coloured sugar. Dragée is French for sugared almond, carvie, bonbon, comfit, sugar-plum, or other sweet, formed and enlarged by gradual additions of syrup baked. They are usually made round, oval, or long, and the colours are various and sometimes overlaid on each other. The noyau, or centre of the dragée proper, is formed by an almond, carvie, caraway seed, pistache, or other nut or fruit instead.

One kind, *Dragées à liqueur*, contains perfumed spirit enclosed in starch and gummed.

Dragées avelines contain the kernels of filberts instead of almonds. Whatever the noyau or centre is composed of, the dragées are coated with flavoured sugar, ladled in a syrupy state in an open pan, worked by hand over the stove, or in a revolving steam-jacketed pan, each ladleful being well dried on before another is added. In making the smaller size of dragées the syrup is added through a sort of jet syringe or continuing jet, the operation being continued until the dragées are considered large enough.

Verdum is a noted centre of manufacture.

Dragées are as popular at christenings in France as is rice at weddings in England, and are strewn about at the church door in similar profusion.

Dragon's Blood.—Da. *Dragoblod*; F. *Sang-dragon*; G. *Drachenblut*; Lat. *Draconis resina*; Port. *Sangue de draco*; Sp. *Sangre de dragon.*

A name given to the deep red resins of a Malayan Ratan Palm (*Dæmonorops draco*), and several other kinds of Eucalyptus trees and plants of the Pterocarpus order, as well as to that exuding from the East Indian palm *Calamus draco.* It is said to owe its name to the supposed similitude of the bayonet-like leaves, scaly fruit or the kernels themselves, to the conventional reptile as figured at Temple Bar, for no one quite knows what a dragon was.

The resin is obtained by shaking the fruits in a sieve or sack and then moulding the powdery product into lumps by heat.

Mostly imported from Sumatra and Borneo, and largely used in oils, turpentines, and varnishes for staining marble, leather, wool, etc., and for colouring dentifrices, plasters, etc. Its colour, in "tears" or masses, is a dark brownish red; in powder, bright red. It is very friable, and breaks with a shining fracture. When pure it readily dissolves in alcohol, ether, and oils, yielding rich red solutions. There are adulterated and fictitious kinds.

Dried Beef. —See *Charqui.*

Dried Apples.— See *Apples* and *Apple Rings*, also *Evaporated Fruits.*

Dried Fruit.—This term comprises Almonds, Currants, Dates, Evaporated Fruits, Figs, Imperials, Plums, Prunes, and Raisins, each kind of which is fully described under its respective name.

They are always sold at actual landing weights, gross and tare.

Liverpool is now the centre of the Dried Fruit trade of the United Kingdom.

Fruits are too often gathered and dried before being ripe, hence the flavour is very inferior to that of fruit well ripened on the tree.

In the western part of the State of New York something like 1,500 tons of fruit alone are dried in evaporators, the greater portion of which is sold for domestic use in the U.S.

From Australia and Canada large quantities are now annually imported into the U.K.

The first fruit-drying machines were invented in America in 1867.

Fruit Exporters.—Messrs. M. & W. Jones, Villa Nova de Gaya, Portugal.

Dried Herbs. — F. *Chiffonnade;* G. *Gezupfte Suppenkräuter.*

Aromatic herbs have always been considered very valuable for their stimulating and antiseptic properties, as well as for their agreeable aroma and pungent flavour. Of course, they are at their best when plucked fresh. The best time to gather them for drying and bottling is on a dry day in the height of the season, just before they begin to flower; they are then full of juice and in greatest perfection. They should be cleansed from insects, earth, and dust, as well as from all rotten and discoloured leaves. A common practice is to hang them up in bunches or paper bags till wanted; but the best and cleanest way is to pick off the leaves, dry them before the fire, reduce them to powder, and cork up in clean dry bottles. The quicker they are dried the better, as they have less time to ferment or grow mouldy; a better aroma is also thus secured.

An excellent aromatic seasoning of herbs and spices is prepared as follows:—Take 1½ ozs. of thyme, 1 oz. of bay-leaves, 1 oz. of savoury, 1 oz. of basil, and 1½ ozs. of marjoram. Dry them thoroughly, pick the leaves. Pound in a morter ¼ oz. of cayenne pepper, with 1 oz. of peppercorns, 1 oz. of cloves, a clove of garlic, the thinly-peeled rind of a lemon, ½ oz. of mace, and 1 nutmeg grated. Mix all well together, pass them through a sieve, and keep stored in well-corked bottles. Time to prepare, one hour and a-half. Probable cost, 1s. 6d. for a pint bottle.

Basil is best gathered about middle of August; *Burnet*, June, July, and August; *Chervil*, May, June, and July; *Fennel*, May, June, and July; *Knotted Marjoram*, July, value 46/- per cwt.; *Mint*, July, value 75/- per cwt.; *Parsley*, May, June, and July; *Sage*, August and September, 22/6 per cwt.; *Savoury*, end of July and August, 15s. per cwt.; *Tarragon*, June, July, and August; *Thyme*, end of July and August, 14/- per cwt.

Dried Mushrooms.—Usually sold in bales of about 1½ cwt. Strong aroma, and generally about 90/- cwt. It is important to know whether they

are free from poisonous varieties. (See *Mushrooms*.)

Dried Plums. See *Bosnian Plums, Prunes*, etc.)

Dried Turtle.—(See also *Turtle Meat and Turtle Soup*.)—Sun-dried turtle is mostly imported from the West Indies, and is usually retailed at 4/6 to 7/6 per lb. It is never eaten alone, but is made into soup. Soup for a dozen or more persons may be made from a quarter of a pound of dried turtle.

It is not generally known that the ordinary land tortoise is excellent eating, and in the West Indies it frequently finds its ways into soups and pies.

Driers.— These are substances incorporated with oils, to facilitate the drying of paints by increasing their power of absorbing the oxygen of the air. They are prepared from various sources. Those in highest repute appear to be the oxides and other compounds of lead and manganese.

1. For dark colours: Best Litharge, ground to a paste with boiled linseed oil.

2. For pale colours: White Copperas and drying oil as above.

3. From Sugar of Lead and drying oil.

4. A drying property may be imparted to linseed oil by boiling it with drying substances, and it thus becomes a very useful vehicle for paints.

Drugs and Sundries.—Herbs or plants containing drugs have been used from the earliest times, and the knowledge of the virtues of each has generally been acquired by accident. Many of the common remedies have long been sold by grocers and general shopkeepers in the smaller towns and villages throughout the country, and during the last twenty years most of the larger stores have been stocking a much extended list. The number of self-doctoring people seems to increase. An ordinary shopkeeper may sell certain remedies when asked for them, but no prudent man, ignorant of diseases and medicines, will undertake prescribing remedies. It is illegal for an unregistered person to act as an "apothecary," but what the latter really means is not very clearly known to everybody, so it may be explained that a duly qualified pharmaceutical chemist is one who sells medicines which are asked for. An apothecary is one who himself selects the medicines and determines on what he ought to give. A man may know that inoculation with vaccine lymph prevents small-pox; that lime juice prevents scurvey; that opium relieves pain; that salicylate of soda cures rheumatic fever; that quinine cures malaria; that iron cures bloodlessness or anæmia; and that a great number of other specifics relieve certain diseases; but the efficacy of a remedy depends much upon the time it is taken and the condition of the person. He may have heard that bismuth stops vomiting, but to give it in a case of strangulated rupture would certainly endanger life; so also to give croton oil as a powerful purgative to one suffering from constipation due to inflammation, might cause death. A dose of chlorodyne, for instance, will relieve a stomach-ache if it fits the complaint, but will not effect a cure where a dose of castor oil or an aperient is necessary. Then as to *doses*, different constitutions require different quantities, and the vendor must make himself correctly acquainted with the *Apothecaries' table*. He must learn what a tablespoonful means, for the modern tablespoon more often contains 6 drachms than 4 drachms. Much also depends on the strength or quality of the drug taken, and whether there is to be a single or repeated administration of the medicine. The habit or desire for taking some drugs—such as opium, morphia, antipyrine, arsenic, and even sulfonal (easily acquired, and as bad to get rid of as the craving for alcohol)—enables some persons to take doses which would kill others. How-

ever, as only registered chemists are allowed to sell medicines which contain such poisons, it has only been thought useful here to append a description of the articles which can be sold by anybody, and to give a few hints as to ordinary uses and doses. Many of the articles are more fully described in the alphabetical order of the book.

Purgatives act best if taken first thing in the morning, when the stomach is empty. Cod-liver oil can be taken in far larger doses in cold weather than in hot.

Gargles.—Children are unable to gargle properly, so that if necessary the back part of the throat is usually treated with the tincture of perchloride or iron, and applied with a camel-hair brush.

The following table for proportioning the doses of medicines to the age of the patient was originally drawn up by Gaubius:—

Under ½	year—	1/18	of a full dose.
,, 1	,,	1/12	,,
,, 2	,,	1/8	,,
,, 3	,,	1/6	,,
,, 4	,,	1/5	,,
,, 7	,,	1/3	,,
,, 14	,,	1/2	,,
,, 20	,,	2/3	,,
Above 21	years,	the full	dose.
,, 63	,,	11/12	,,
,, 77	,,	5/6	,,
,, 100	,,	2/3	,,

Dr. Young gives the following simple guide:—For children under 12 the doses of most medicines must be diminished in proportion of the age to the age increased by 12 years. Thus, at two years the dose should be 1-7th of that for an adult, viz., $\frac{2}{2+12} = \frac{1}{7}$.

Alum.—This is useful as a gargle and an astringent for inflammation of gums. Invaluable in dyeing (see p. 37).

Amber (*Oil of*).—Stimulant, antispasmodic, and diuretic. Given for dropsy, etc. Dose 5 to 10 drops. Externally as a rubefacient for paralytic and rheumatic limbs.

Ammonia is used in lump or liquid for cleaning clothes and for washing utensils.

Ammonia, Aromatic Spirit of (Spirits of Sal Volatile).—Stimulant, antispasmodic, diaphoretic. Given for syncope, paralysis, nervous weakness. Dose 10 to 30 drops. For faintness a teaspoonful in a wineglassful of water.

Aniseed Water.—Given to babies as a carminative; also good in cough mixtures for children. The *oil* is used to bait rat-traps, 3 or 4 drops being quite sufficient (see page 46).

Antibilious Pills.—Aperient and good for biliousness. Dose, 2 at bedtime.

Aromatic Vinegar.—Used as a smelling-bottle for headache or fainting (see page 56).

Asafœtida.—In the form of a four-grain pill often given for flatulency, colic, etc.

Barley (*Robinson's Prepared*).—Emollient, nutritive. Excellent food for infants.

Basilicon Ointment.—Drawing, emollient, and healing.

Bitter-sweet.—Given for asthma, rheumatism, and scrofula. Dose, 10 to 30 grains.

Boracic Acid.—A teaspoonful dissolved in half a pint of warm water makes a very simple mouthwash. A little peppermint or lavender oil makes it pleasanter.

Boracic Ointment.—Cooling and healing.

Borax (in lump or powder).—A most useful medicine for many purposes. Mixed with honey for inflamed gums and sore mouths of infants. A splendid mouthwash for adults suffering from foul stomachs, and good gargle for sore throats. Also taken internally as a diuretic. Dose, 10 to 30 grains. Pure borax is an antidote for prickly heat and other inflammatory skin affections due to humid and hot weather. It is also used in laundries for washing purposes and for starching linen. Largely used by plumbers in soldering (see page 125).

Broom Tops.—The infusion is given

in dropsy as a diuretic.

Buckthorn Syrup.—Purgative. Equal parts of syrup and castor oil, given to dogs and cats.

Buchu Leaves.—Tonic, sudorific, diaphoretic. Given chiefly in retention of Urine or chronic inflammation of the bladder. Dose, 20 to 60 grains.

Calumbe Root.—Infused in hot water will make a good bitter stomachic and appetiser. A wineglassful to be taken twice a day.

Camphor (see page 166).—One of the most useful of domestic medicines. Preventative of disease; preserves clothes from moths and other insects. Mixed with chalk (powdered) forms a splendid tooth-powder.

Camphorated Oil.—See page 167.

Carbonate of Soda.—Given for indigestion, fermentation, and puffiness, or acidity of the stomach. Dose, 10 to 20 grains, in a cup of water. Also used as a baking powder.

Cardamom Seeds.—Stimulant, carminative, and stomachic tincture. Dose, 5 to 20 grains. Used in some countries for making cakes, etc.

Carraway Seeds.—Used for flatulency, dyspepsia, etc. Dose, 10 to 30 grains.

Carron Oil.—A mixture of linseed oil and lime water in equal quantities, for burns and scalds.

Cascarilla Bark.—A tonic, astringent and stomachic. Given in dyspepsia, flatulent colic. Dose, 20 to 60 grains. The bark, if lighted, emits a pleasant smell.

Castor Oil.—As a purgative, in its general use this acts more quickly than any other medicine, and seldom gripes. An aperient, best taken in warm milk or coffee. Child dose, ½ oz.; adult, 1 oz. It is also excellent for softening shoe leather, preserving the leather, and keeping out dampness.

Cayenne Pepper.—A tincture given for diarrhœa, dyspepsia, and flatulency. Dose, 5 to 10 grains. A few drops in a little water form an excellent gargle for inflamed throat.

Camomile Flowers (see page 205).—Infused in hot water; about a wineglassful taken before meals creates an appetite. With a little ginger, or any other aromatic, forms a splendid mixture for dyspepsia. With alkalies, for gout or derangement of the stomach. Also useful as a fomentation in swelling of the face, etc.

Cherry Ripe Powders.—See page 216.

Chlorate of Potash.—Diuretic and stimulant. Useful as a gargle in ulceration of the throat. Dose 5 to 30 grains.

Chloride of Soda (Common salt).—Given for worms, vomiting of blood; also used as a tooth-powder, and in solution as a mouthwash.

Cinchona Bark.—Bitter, astringent, and tonic; given as a substitute for quinine. Dose, 10 to 30 grains.

Cinnamon Bark.—Most grateful aromatic; given in dyspepsia and diarrhœa. Dose, 10 to 30 grains.

Citric Acid.—Antiseptic and refrigerant; useful as a refreshing drink, like lemonade, etc., in fevers, or when the mouth is parched and dry. Dose, 10 to 60 grains, in water.

Cloves.—Stomachic and stimulant. Dose, 5 to 10 grains. The oil is good for toothache.

Common Fennel.—Carminative and diuretic. Dose, 10 to 30 grains.

Compound Rhubarb Pills.—Gentle aperient, for indigestion. Dose, 2 at bedtime or 1 before food.

Compound Liquorice Powder.—Aperient and stomachic. Dose, 1 teaspoonful at bedtime.

Cream of Tartar.—Refrigerant, diuretic, slightly aperient. Given in habitual constipation. Also made into drinks for persons labouring under febrile and inflammatory affections. Dose, ½ to 1 teaspoonful. It is one of the most useful of domestic medicines.

Dandelion Decoction (concentrated).—Diuretic and aperient. Given in dropsy, inflamation, jaundice, and in liver and kidney diseases. Dose, 1 to 2 teaspoonfuls.

Dill Water.—Carminative. Given to babies for wind. Dose 1 or 2 teaspoonfuls.

Elder Flowers.—The water has an agreeable odour, and is used as a wash for the face. The ointment is very pleasant and cool.

Elm Bark.—In powder, used as a poultice for drawing abscesses.

Epsom Salts.—Purgative and diuretic. Dose, ½ to 1 oz. Well diluted, is a good blood purifier and cleansing medicine for the stomach.

Essence or Spirits of Camphor.—Stimulant, antispasmodic. Recommended in diarrhœa or bowel complaints. A good preventative of cold. Dose, 10 drops on sugar. Mixed with ammonia and turpentine forms a splendid liniment for rheumatism, sprains, or bruises.

Essence or Spirits of Peppermint.—Stimulant, carminative, cordial, stomachic. 10 drops on sugar or in a teaspoonful of water.

Figs.—Demulcent, and slightly laxative.

Fryar's Balsam (compound tincture of benzoin.)—Used in cases of chronic cough, irritation of the throat. Externally applied to rough, ragged, and bleeding cuts. Dose, 20 drops on lump sugar, but will not mix with water. The household should never be without it.

Foot Powder for sweaty feet and bad odour of the feet. 21 parts of powdered alum mixed with 1 part of maize meal.

Gambia.—When chewed in the mouth is useful in cases of severe purging.

Gentian Root.—Tonic, stomachic, slightly aperient. Given in dyspepsia, debility, hysteria, gout, jaundice, etc. Dose, 10 to 30 grains.

Ginger Essence or *Tincture.*—Carminative, stimulant. Given in conjunction with other remedies in dyspepsia, flatulency. Dose, 10 drops on sugar or in a teaspoonful of water.

Ginger Root.—Carminative, stimulant, and good for flatulency; also useful as a sialagogue, a little chewed before dinner promoting the flow of saliva.

Glauber's Salts (*Sulphate of Soda*).—Purgative. Dose, ½ to 1 oz. Given in small doses as a purifier for the stomach. Often taken in the place of Epsom salts.

Goose-Grease (*Adeps Anseris*).—One of the most useful emollients known, and, when applied to the surface of the skin, penetrates more thoroughly than any other fat or oil.

Gregory's Powders.—See separate heading.

Guaicum Tincture (*Compound*).—Stimulant, diaphoretic. Good for rheumatism or gout. One teaspoonful in a little milk.

Hops.—A narcotic, anodyne, and a tonic. Dose 5 to 10 grains. A pillow of hops will induce sleep.

Hop Tincture.—Bitter, stomachic. Given for a loss of appetite. Dose, ½ to 2 teaspoonfuls.

Horehound.—Given in chronic catarrh and asthma. Dose in powder, half a teaspoonful.

Iceland Moss.—Given in asthma and bronchitis. Dose, 1 to 4 drachms.

Indigestion Powders.—For acid dyspepsia a simple mixture of bicarbonate of soda and ginger is often given. It may be flavoured with a trace of spear mint or peppermint. In other cases, American scale pepsin 5 grains and powdered ginger 5 grains form a common dose.

Iodide of Potash.—Given in rheumatic gout. Also as a blood purifier. Dose, 2 to 5 grains.

Iodide of Iron Syrup.—Tonic, alterative. Used in scrofulous affections and in chronic rheumatism. Dose, ½ to 1 teaspoonful in water.

Ipecacuanha Wine.—Emetic, expectorant. Given for cough and cold. Dose, 10 to 20 drops. As an emetic 2 tablespoonfuls.

Irish Moss.—Given in asthma and bronchitis. Dose, 1 to 4 drachms.

Iron Wine.—Tonic. Strengthening, given with cod-liver oil for delicate children. Dose, 1 to 2 teaspoonfuls.

Juniper (*Oil of*).—Stimulant, carminative, and diuretic. Good for pain

in back. Dose 5 to 10 drops.

Lavender Tincture Compound.—For lowness of spirits or hysteria. Dose, ½ to 2 teaspoonfuls.

Lime Water.—Antacid, astringent. Given in diarrhœa. (Should contain 1 gramme of lime in 2 ozs. of water.)

Lime Water, Mixed with Linseed Oil (Carron Oil) applied the first thing for burns and scalds.

Linseed.—In infusion it forms a very serviceable, demulcent, and mucilaginous drink for cough.

Liquorice Root.—Demulcent. Given in asthma and bronchitis.

Logwood.—Tonic; recommended in chronic diarrhœa and dysentery. Chiefly used in dyeing.

Magnesia (*Calcined*, or *Carbonate of*).—Antacid and laxative. Used in heartburn; very cooling and cleansing for the stomach. Dose, ½ to 1 teaspoonful.

Manna.—Commonly given as a laxative to children.

Marshmallow Flowers or *Roots.*—A favourite medicine among Spaniards. Demulcent, lubricant, emollient. Used in pulmonary and intestinal affections; also a gargle and for fomentations.

Marshmallow Ointment.—Drawing, emollient, and healing.

Mulberries.—Delicious, cooling, and laxative.

Myrrh.—Tonic, emmenagogue, stimulant, and expectorant. Dose, 10 to 30 grains. Used in almost all tooth-powders.

Myrrh Tincture.—Seldom used alone, but with a little alum and water is a pleasant and good astringent for relaxed and inflamed gums.

Nitre or *Saltpetre.*—Diuretic and refrigerant. Dose, 5 to 10 grains. Given for sore throats and in cases of fevers. It is also useful in teaspoonful doses for horses.

Nut Gall Ointment.—Astringent; useful for piles.

Nutmeg.—Carminative. Given for dyspepsia and nausea. Dose, 5 to 10 grains.

Olive Oil.—Demulcent, laxative, and relaxant. Given for catarrh, pulmonary disorder, and worms. Dose, 2 teaspoonfuls.

Orange Tincture.—Tonic and stomachic. Dose, 1 to 2 teaspoonfuls.

Oxide of Lime (Zinc Powder).—Used as a face powder. Recommended for healing sores or abrasion of the skin.

Pellitory of Spain (Pyrethrum Root).—Stimulant and sialagogue. The tincture is good for toothache.

Peppermint.—Carminative and spasmodic.

Pimento.—A spice, stimulant, tonic, and carminative. Dose, 10 to 20 grains.

Pomegranate.—Given in diarrhœa. Useful as a gargle for quinsy; also good for worms. Dose, 10 to 30 grains.

Potash (*Bi-carbonate of*).—Antacid and diuretic. Given in sickness or vomiting. In cough mixture as a stimulant and expectorant. Dose, 10 to 20 grains.

Prunes.—Laxative and nutritive.

Quassia Chips.—A splendid tonic, and will create a good appetite; a substitute for quinine. A weak infusion, if applied to children's hair, destroys nits.

Quinine Sulphate.—Tonic and febrifuge. The properties are known to nearly everyone. Dose, 3 to 5 grains. (Also known as *Ague salt*, *Jesuits' powder*, etc.)

Quinine Tincture.—Tonic given in cases of neuralgia, nervousness, etc. Ammoniated tincture of quinine is used in influenza, cold—especially for cold in the head. Dose, 1 teaspoonful in a wineglassful of water.

Resin, or *Basilicon Ointment.*—Applied to indolent and ill-conditioned ulcers, etc.

Rhatany.—Given in diarrhœa, hemorrhages, etc. Dose, 5 to 15 grains. The tincture in water is an astringent for relaxed gums.

Rhubarb (root or powder).—Astringent and purgative. Dose 5 to 30 grains. A small piece chewed in the mouth will relieve indigestion.

Rhubarb Tincture.—Stomachic. Dose, 2 teaspoonfuls. Purgative (1 oz.), 2 teaspoonfuls used in colic and diarrhœa.

Rosemary.—Useful as a hair-wash.

Roses (Confection of).—If applied to the eyes will relieve any irritation.

Rose Water.—Fragrant. Mixed with glycerine is useful for rough hands and face.

Rue.—Stimulant, antispasmodic, and emmenagogue. Given in hysteria and flatulent colic. Dose, 10 to 30 grains.

Saffron.—Used as a colouring. Sometimes given for measles, but very uncertain as a medicine.

Sal Ammoniac.—Used by plumbers for soldering. An excellent remedy for chilblains. Given also in asthma and bronchitis. Dose, 10 to 20 grains.

Salts of Tartar.—Used as a hair-wash.

Sassafras.—Given with sarsaparilla for purifying the blood.

Sarsaparilla Decoction.—A splendid blood purifier, alterative, demulcent, and slightly diaphoretic. Given chiefly in cutaneous affections.

Seidlitz Powders.—Aperient. For sickness and biliousness. Best taken before breakfast. (See also separate entry.)

Senega Root.—Stimulant, expectorant, and diuretic. Given in chronic catarrh, asthma, and bronchitis.

Senna.—Given for constipation, and especially to dropsical persons. Often given to children.

Senna Confection.—Lenitive, electuary, aperient, lavative; useful in habitual constipation. A very safe remedy. Dose, 1 or 2 teaspoonfuls.

Senna Syrup.—Purgative. Dose, 1 to 4 teaspoonfuls.

Senna Tincture Compound.—Stomachic, purgative. Dose, 1 to 4 teaspoonfuls.

Spermaceti.—Demulcent and emollient. Used in coughs and consumption. Dose, 20 to 60 grains.

Spermaceti Ointment.—A mild and softening cerate.

Spirits of Sweet Nitre.—Diuretic, diaphoretic, and refrigerant. Used in fevers, dropsy. Dose, 10 to 40 drops. For a severe cold 1 tablespoonful (2d. worth) in half a tumbler of warm water, add a lump of sugar, and taken at bedtime is very useful.

Spirits or *Oil of Turpentine.*—Purgative, stimulant, and rubefacient. Not often used internally except as an anthelmintic (worms). Dose, 8 to 10 drops on sugar to be taken fasting. It is the principal ingredient in most liniments or embrocations.

Venice turpentine is used for drawing abscesses, etc.

Starch Powder.—Used as a dusting or healing powder.

Steel Tincture or *Iron Tonic.*—Emmenagogue. Dose, 10 to 30 drops in water after food.

Sulphur or *Brimstone Flowers.*—Chiefly used as an alterative and laxative. Externally (in the form of ointment) and internally for itch and other cutaneous diseases. Dose, 1 teaspoonful in milk or water. Also used for fumigating bedrooms after infectious fevers, etc., and to exterminate bugs from same. Sulphur baths recommended for rheumatism; also for skin diseases.

Sulphur (Milk of).—Laxative and blood purifier. Dose, 1 teaspoonful. Best taken in milk and water before breakfast. A little puffed on the face at bedtime will remove pimples and freckles.

Sulphur Ointment.—For irritation of the skin, itch, etc.

Tannic Acid.—Astringent. Useful in relaxed throat, as a gargle; also used in dressing skins of animals.

Tartaric Acid.—Refrigerant and laxative. Given in fevers and inflammations. Mixed with a little carbonate of soda and syrup of lemons forms a very refreshing and cooling beverage. Dose, 10 to 20 grains.

Tolu Tincture.—Stimulant, expectorant. Dose, 15 to 30 drops.

Turmeric.—Supposed to be good for dyspepsia and diarrhœa. Dose, 10 to 30 grains, but seldom used as a medicine.

Zinc Ointment.—For cooling and healing.

Caution.—Retailers are too ready to trust wholesalers and travellers, and take for granted that the preparations

obtained are up to sample, and of the nature, substance, and quality required. Hundreds are being fined heavily for selling preparations below the standard of the current British Pharmacopœia. Even if of full Pharmacopœial strength and quality when received into stock (which is not always the case), many of them change if kept too long, or the strength may evaporate if bottles are opened frequently or stoppers be left out. Most of the wholesale dealers in Drugs and Druggists' Sundries make up their own; and it is seldom that the cheapest are reliable, for anybody can call himself a manufacturing chemist. The Pharmaceutical Society, who get the fines, are always employing spies to entrap grocers or their assistants into selling Patent Medicines, Sheep Dips, Weed Killers, or drugs which contain poisons or medicaments which are below the proper standard, and the local chemists are generally the informers. It is therefore of the highest importance to shopkeepers that they should buy their supplies of official strength from respectable and *qualified* chemists, for not half of the "manufacturing chemists" have ever passed an examination. No better firm can be named than that of F. Newbery & Sons, 27 Charterhouse Square, London.

Drying Oils.—See *Boiled Oils.*

Dry Soaps. — (See also *Soap Powders, Borax Soap Powders, Washing Powders, Extracts of Soap,* etc.)—These are usually intended as scouring agents or to soften hard water. They consist largely of carbonate of soda together with a little real soap, and frequently a large addition of water and common salt. The general method of manufacture is to melt scraps and chippings of ordinary pale soap, and to boil with soda crystals dissolved in their own water of crystallisation. When boiled down or evaporated sufficiently, it is let out of the pan into a cooling trough, and a quantity of soda ash and bicarbonate of soda crutched into it while cooling; after which it is allowed to set into a stiff paste, and finally dried, ground, and packeted for sale. Their value depends partly on the water in them, which varies from 25 to 60 per cent., and partly on the quantity of *real soap* in them, which varies from 1½ to 20 per cent. The remainder is mostly carbonate of soda and common salt; some of them may also contain sodium and potassium chlorates and sulphates, with occasionally traces of paraffin, camphor, essential oils, and other bodies added to impart disinfectant or other special properties to the powder.

Special Firms.—Job Day, Garden Street, Leeds, and 52 Fenchurch Street, London, E.C.; H. May & Co., Ltd. (manufacturers), Goodinge Road, Islington, London, N.; Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool (also Sole Agents for the "Westminster" Paraffin Dry Soap and "Lawrence's Musk Paraffin").

Du Barry's Revalenta. — Red lentils ground to a fine powder.

Dubbin or Dubbing.—A preparation used by curriers, shoemakers, and others to dress and soften leather, and to render it waterproof. The repeated use of blackings which contain sulphuric acid has a tendency to burn or rot the leather, and dubbin then becomes a useful application.

It is generally made by boiling waste cuttings of sheep-skins in common cod-oil; but sometimes by boiling, say, 2lbs. black resin with 1lb. of tallow in a gallon of train or cod oil till of proper consistency.

An ordinary quality is made by melting 2lbs. paraffin wax and 2lbs. resin in 2lbs. naphthalene and 1lb. soft soap; 1 gallon of warmed paraffin oil is then stirred in, and sometimes a little colouring matter.

A useful dubbin for summer use when boots need to carry a polish is made of 2 parts of golden syrup, 5 of castor oil, and 3 of carnauba wax.

For special preparations, apply to Day & Martin, Ltd., London and Liverpool. (See adv. near end of book.)

Duinen-thee.—An African beverage, usually drunk for coughs and chest diseases. It is an infusion of the leaves of *Helichrysum auriculatum.*

Dugong.—A name in Australasia and the Indian Ocean for the *Halicore Dugong*, which is taken chiefly for the oil obtained from the blubber. The oil is claimed to be equal to cod-liver oil. The bone of the animal in fineness and hardness of grain, specific gravity, and appearance, approaches ivory, and the flesh is often potted and sold in shops as a delicacy.

Dulse, or *Dillesk* as it is called in Ireland, is a kind of purple or crimson sea-weed, *Rhodymenia palmata.*

It is to some extent used as food by the Scotch and Irish, but most in Canada and Iceland.

It is washed in fresh water, dried, and packed in casks for preservation.

Some eat it with fish and butter; others boil it in milk with a little rye-flour, but it is often eaten raw, and is considered a good tonic and stomachic. Sheep and cattle also eat dulse in its fresh state. In Kamtchatka a fermented liquor is also made from it.

Dulse is usually to be found between tide-marks and deeper waters, adhering to rocks and other algæ.

Dulsin.— A new sweetening product, analogous to saccharin. It is said to be devoid of the injurious properties of the latter, although made from Prussian blue.

Dunlop Cheese. — An excellent article, rich, sweet, mild, white, and buttery, made at Dunlop, in Ayrshire, Scotland. The best are made entirely from new milk. Average composition: Fat, 31·86; casein and albumen, 25·87; water, 38·46; and ash, 3·81. These cheeses are made round in form, and 30 to 60lbs. in weight, very similar in quality to Derbyshire and Gouda, but much larger.

It was originally introduced by one Barbary Gilmour, a farmer's wife, in the parish of Dunlop.

Dunlop cheese has, however, lost ground of late years, and "Cheddar" appears to have been replacing it.

Durians, or Pride of the Malay Isles. — These fruits are the produce of a large and lofty forest tree something like an elm, but with a more smooth and scaly bark, and known scientifically as *Durio Zibethinus*, of the same family as the Kola-nut.

The Durian is round or slightly oval, about the size of a large coker (cocoa) nut, of a green colour, and covered all over with short, stout spines, the bases of which touch each other, and which are consequently hexagonal, while the points are very strong and sharp. It is so completely armed that if the stalk be broken off it is not easy to lift one from the ground. The outer rind is so thick and tough that it never breaks in falling from the tree. Inside it contains five cells, which are satiny-white, and are each filled with an oval mass of cream-coloured pulp, embedded in which are two or three seeds about the size of chestnuts. This pulp is the eatable part, and its consistence and flavour are indescribable. A rich butter-like custard, highly flavoured with almonds, gives the best general idea of it, but with a suspicion of cream cheese, onion sauce, brown sherry, and other incongruities. It is neither acid, sweet, nor juicy; yet it is of a hot humid nature, and although to those unaccustomed to it, it smells very sickly and most like rotten onions, yet by those who have overcome its *civet* odour and its turpentine flavour, it is ranked among the most delicious of fruits, and the natives prefer it to any other.

Durra, Dhurra, or **Dourrah.** — See *Dari* and *Millet Seed.*

Dutch Candy.—See *Sugar Candy.*

Dutch Cheese. — F. *Fromage d'Hollande;* G. *Hollandische Käse;* Port. *Queijo Flamenco;* Sp. *Queso de bola.*

A small, hard, salty class of cheese made in Holland, ordinarily from thrice skimmed milk, which is warmed, and the curd separated by the addition of muriatic acid instead of rennet acid, as in this country. Their toughness and compactness show that the curd has been heated. The salting is effected by steeping them in brine, and during the process of ripening the cheese are damped

with warm whey. In two or three months they are ready for use. In finishing them off castor oil is largely employed. The best known are *Edam* (or *Ball*), *Gouda*, and *Schapekase*, more fully described under their respective names.

Dutch cheeses usually weigh about 4lbs, but sometimes up to 14lbs. each, and are imported loose. About 500 of the ball or Edam shape go to the ton, but 500 of Gouda flats weigh about 2½ tons. They are all good keepers. Alkmaar, in North Holland, is a great centre for these cheese, in fact, the market of that clean and flat little town is the largest in the world for cheese. On Friday, the market day, the whole area is covered with pyramids of what look like orange-coloured cannon balls, but are in reality cheeses. The effect of colour is most brilliant and the scene a busy one. A curious effect is produced by the men who carry the cheeses about, arranging them in pyramids, and others removing them when sold. These porters are always arrayed in white tunics and coloured turbans, the colour of the turbans varying according to the firm of merchants or brokers in whose employ the men are. They work in couples, carrying the cheese on long ladder-like trays, which depend from their shoulders by yokes, so that the weight—sometimes very heavy—is only just raised above the ground. The colour of the trays corresponds to the colour of each set of men. The turbaned porters do not touch the yokes much with their hands, but move along constrained to a peculiar and almost comic gait by the weight of the cheeses on the tray. Both men look in the same direction, one at the front and the other at the tail of the load, and their progress strikes a stranger at first sight as exceedingly droll, but is easily appreciated when understood. The vigorous striking of hands by buyers and sellers is also very amusing. Cheeses from the Alkmaar market go almost all over the world, and are found very cheap and convenient for ship's use.

Dutch cheese are often too salt, and they have at times a most ancient and fish-like smell. This arises from the cows pasturing where the eels have migrated from the canals, which they do at certain seasons in myriads. Their slime gives a taint to the cheese and butter, just as the peaty taste is imparted to Irish butter made on moorland and bogland farms.

Dutch cheese (and Dutch butter) are always much in evidence at Brewer's Quay and in Tooley Street, London.

Dutch Fat.—The commercial name for a low quality of mixed fats, old butter, etc., principally used for frying fish and for making cheap pastry, especially in East London.

Dutch Gin.—See *Hollands*.

Dutch Vegetables.—See *Vegetables in Brine*.

E

Earth Nuts.—A name for nuts which grow in the ground, such as Arachis nuts or American *Pea-nuts* (the negro name in Florida being *Pinders*, and in Virginia and North Carolina, *Goobers*. (See *Ground Nuts, Chufa Nuts*.)

Earth-nut Cake. — The cake, or refuse, which remains after expressing the oil out of earth nuts. If the shells or husks have been removed from the nuts before pressure the cake is called *Decorticated*, but if with the shell on the cake is termed *Undecorticated* Cake.

Earth-nut Meal (also known as *Ground-nut Meal*) is a dark yellow powder made out of the ground shells and seed skins of earth or ground nuts. It has a slightly bitter taste, not free from sand. The name given to this new commercial product is rather misleading, as it denotes the ground kernel and its covering, whereas it is prepared mainly from the shell and outer covering, the nutritive value and digestibility of which is considerably less.

Easteleine.—The registered title of a capital baking powder manufactured by the Easteleine Company at Newbury, Berks. Those who want to sell a really good article should write for a sample, and test it at home, and they will thank the "*Grocer's Manual*" for drawing attention to it.

Easter or **Pasche Eggs.** — These have for many centuries been popular with all Christian sects as symbolical of the Resurrection, and further back still eggs were looked upon as sacred by the Egyptians and emblematic of the renovation of mankind after the deluge.

They appear to have become prominent as an article of diet at Easter chiefly because their use was forbidden among Roman Catholics during Lent; but on the Saturday before Easter, the great quantity of eggs held over for six weeks were blessed and distributed among friends on Easter Sunday. They were dyed yellow, violet, and especially red.

The egg is still the typical emblem of Easter; in some form or other it has been the unquestioned type of the new life from the very dawn of the Christian era. In Russia as early as 1589 eggs coloured red typifying the blood of Christ shed as an atonement for our sins were the most treasured of exchanges at Easter. Every believer went abroad at this season with his pockets well supplied with Easter eggs. When two Russians met for the first time during the Easter holidays, if they had not met on the day itself, the belated Easter compliments were passed, first by shaking hands in silence, then the elder (or the younger, if he outranked the elder), would say: "The Lord is risen," and his companion would reply: "It is true"; then they kissed each other, and ceremoniously drew from their respective pockets the Eastern emblem and exchanged eggs.

The Chinese claim that the world was formed of the two parts of an enormous egg. From the yolk of the egg stepped forth the human being; he waved his hand, and the upper half of his late castle, the egg-shell, went upwards, and became the concave heavens of blue, the lower half fell reversed, making the convex earth, and the white albumen became the seas. The Syrians believed also that the gods from whom they claimed descent were hatched from mysteriously laid eggs. Hence we infer that our present custom of offering the Eastern egg emblem has the heathen legends for its origin.

The custom of presenting them as Easter offerings is more general in Cumberland, Cheshire, and a few other Northern counties than in the South of England.

Many methods have been employed for colouring them. Usually they are boiled very hard in water which has been coloured with red, blue, or violet dyes.

Sometimes they are tied round with different coloured ribbons or pieces of other bright-hued stuffs, and occasionally names and dates are written with grease on the eggs before wrapping them up, so that when boiled the colours dye the eggs, and the writing is left white and legible.

The engraved eggs that are prepared for sale are very puzzling to those who do not know how easily the engraving is done. The writing is done on the shell with wax or tallow, and then the egg is soaked in a weak dilution of some acid, even vinegar will answer the purpose. The shell is partially eaten away by the acid wherever not protected by the wax, and the writing appears in bold relief. This art was discovered in England about two hundred years ago, and the inventor came near being burned for sorcery, as he tried to pass off some of the inscriptions for prophecies.

It is quite wonderful in how many ways Easter eggs may be dyed and ornamented. There is the good old way of dyeing them with terra-cotta brown by adding onion-peel to the water, or giving them a fashionable but unbeautiful magenta tint by means of a spoonful of aniline dye. You can also dye them a lovely ebony-black by putting shoots of young rye into the water in which they are boiled. But they can be made much prettier with very little additional trouble. Draw an outline picture of any flower or animal on white paper, cut it out, gum it on the egg, tie a piece of muslin or other thin material round

the egg in order to keep the picture in its place, and boil the egg for at least five or six minutes. Then take the paper off, and you will find that the coloured egg has a pretty white illustration. Another excellent way is to tie young leaves or simple spring flowers round it, the outlines of which make charming drawings on the eggs.

In some districts a game is played by boys on Easter Monday, consisting of bowling the eggs one against the other, and the egg that breaks first is won by the owner of the egg that strikes it. Even bishops and clergymen used to play at ball with Easter eggs in olden times.

East India Arrowroot, also known as *Curcuma Starch,* is obtained from the tuberous roots of *Curcuma augustifolia,* a plant common in Southern India.

It grows about 3 feet high, and bears yellow flowers.

There are several other species of Curcuma, and it is from these roots that turmeric is also obtained. Most of them possess the same aromatic stimulating properties as the common ginger.

Eating Oils.—See *Edible Oils.*

Eau.— French for *water,* and pronounced like the English letter O.

Formerly the word *eau* (water) was in much wider use than at present. Not only was it applied to every natural liquid, but to almost any liquifyable body. Hence there were *eau de vie* (water of life), *eau-forte* (nitric acid), Lavender-water, Rose-water, and a great number of others. The following are well known, and are elsewhere described under the names of their base or source, such as Brine, Dantzic-water, Orange Flower-water, Lime-water, Florida-water, Toilet Vinegar, and Dentifrices. Others as "Elixirs," Aerated Waters, Mineral Waters, etc.

Eau Creole.—A highly-esteemed cordial made in Martinique, West India, by distilling the flowers of the Mammee apple with spirits of wine.

Eau d'Arquebuse.—A name given in the south-east of France, and especially around Lyons, to a medicated spirit, in the composition of which there are the juices of a great many kinds of plants.

Eau de Barbade.— A celebrated liqueur of delicious aromatic flavour, made in the West Indies from lemon-peel.

Eau de Cologne or **Cologne Water.**—G. *Kölnich Wasser;* It. *Acqua di Colonia;* Sp. *Agua de Colonia.*

An aromatic toilet article or perfume, consisting of alcohol perfumed with essential oils.

It is made from different materials and in several ways. It owes its name to the fact that the first was made at Cologne, on the Rhine, about the middle of the eighteenth century, and was invented by Jean-Antoine Féminis (Fariná), an apothecary of Cologne. It was supposed to possess several therapeutic properties, but it is now fabricated in many other places in France, Germany, England, etc. The original is said to be made from macerations of bergamot, balm, mint, the petals of roses and violets, lavender flowers, wormwood, sage, thyme, orange flowers, nutmegs, mace, cloves, cinnamon, camphor, etc., distilled with spirits.

Every practical perfumer now has his own recipe, and the published formulæ are innumerable. (1) Oil of neroli, 30 minims; oil of petit grain, 10 minims; oil of bergamot, 2 drachms; terpineless lemon oil, 10 minims; oil of thyme, 5 minims; oil of rosemary, 15 minims; alcohol (90 per cent.) to produce one pint. (2) Oil of bitter orange, 3 drachms; oil of neroli, 30 minims; oil of lemon, 60 minims; oil of bergamot, 60 minims; oil of French lavender, 10 minims; alcohol (90 per cent.) to make 20 fluid ounces.

Importers.—F. Newbery & Sons, 27 and 28 Charterhouse Square, London, E.C.

Eau de Javelle.—A strong solution prepared by mixing in suitable propor-

tions potassium carbonate, bleaching powder, and water. It is next filtered, and is chiefly used as an antiseptic and as a bleaching agent for removing stains of ink, wine, etc. Originally produced at the chemical works at Javel, a hamlet in Paris, close to the Champ de Mars Exhibition, but Eau de Javel has during the last twenty years been superseded by the *Extract de Javel*, invented by M. Cotelle, of Ponthierry, S. et M.

Eau de Luce (from *Luce*, the inventor's name).—A compound of mastic, alcohol, oil of lavender, oil of amber, and ammonia-water.

It is used as a stimulant and antispasmodic.

Eau de Melisse des Carmes.—Often called a liqueur, but is merely strong spirit flavoured with balm-mint (*Mélisse citronelle*), hyssop, cinnamon, nutmeg, clove, anise, coriander, angelica, thyme, sage, and marjoram.

It is extensively employed in all French families, and is no doubt a good remedy for nervous maladies, apoplexy, paralysis, indigestion, congestion, and similar sudden attacks of illness. Its origin dates from a long time back. Up to a late period it was in the hands of the Carmelites, but on the dispersion of the religious orders it became the property of a family named Boyer, who have reaped a golden harvest from it. Mdme. Boyer was recently married for the second time to Prince Lubomirski, a well-known Parisian and author of numerous works. Sold in narrow cylindrical bottles.

Eau de Paris.—A substitute for *Eau de Cologne* and similar cosmetics. It is often secretly imbibed as a cordial and stimulant.

Eau de Seltz.—The French name for *Seltzer Water*.

Eau de Vie.—The French name for Brandy, literally signifying *Water of life*.

Eau de Vie de Dantzig.—See *Gold Water*, *Acqua d'Oro*, etc.

Eau de Vie de Piquette.—A spirit distilled from an inferior wine, obtained by washing pressed grapes in water.

Eau de Vie d'Hendaye.—A sweet spiritous cordial, of which there are three varieties—white, which contains the least spirit; yellow, which is the medium; and green, which is the strongest.

Eccles Cakes.—A sort of currant sandwich, very like Banbury cakes, only not made so dry. There is no definite recipe for them, every confectioner using his own way; the great guiding principle, however, being currants, sweetness, and lightness. Many consist of a piece of puff-paste in which a few currants and a little brown sugar, say about four parts currants and three parts raw sugar, are folded, and turned over with closings underneath, rolled out to desired size, then nicked once or twice with a knife on the top, washed with white of egg, and dusted with fine sugar. In Eccles, Manchester, and many adjacent towns, they are baked in a very hot oven, so as to melt and caramel the sugar on the outide of the cake, but it is not a good plan. They look and eat better if baked in a cool oven, and the sugar not discoloured.

Edam, Eidam, or **Ball Cheese.**—(See also *Dutch Cheese*.)—A popular kind of hard and salty Dutch cheese, of globular form, made in moulds, from milk coagulated with muriatic acid instead of the usual rennet.

The northern part of Holland is the seat of the industry, and the consequent cleanliness of the relish is, therefore, doubly assured. In making it the fresh cows' milk is carefully strained and the acid added. As soon as the milk curdles the whey is drawn off, and the curd, thoroughly kneaded, is pressed into moulds. This process is repeated until the whey has all been extracted and the curd is comparatively dry. It is then wrapped in a linen cloth and kept for ten or twelve days until quite solid. Then the cloth is removed and the cheese put into salt lye. Afterwards a little more dry salt is sprinkled on the cheese, until the maker thinks it is salt enough to insure its keeping. It is next put into a vessel, and, after being washed with whey, is scraped to

remove the white crust. It is next carried into a cool room and laid on shelves, where it is frequently turned. The ripening process lasts from two to three months, the round balls growing the fine yellow or reddish colour peculiar to Edam cheese.

It is below the standard as regards fat, and contains as much as 4 or 5 per cent. of salt. The outside is usually coloured a deep red with a preparation of madder or annatto, and the cheeses intended to be exported to this country are rendered still more brilliant by dyeing the rind with a vegetable dye. They keep best in tin-foil, as this prevents to a great extent drying up; but when in foil it is well to grease them. Some people oil them and wrap in brown paper for keeping a long time.

(Two other popular sorts of cheese are made in Holland, viz., *Gouda* and *Schapekase*, which see.)

Eddoes, Eddas, or Edders. — These are West Indian names for the tubers of various species of *Colocasia*, or *Arum esculentum*.

In some places they are known as *Cocos*. They are roasted and eaten same as potatoes. Sometimes they are stewed for a couple of hours in their skins, and then peeled for the table.

The leaves of the plant are also boiled and used as spinach, and the corns are used for soups.

Imported mostly in barrels. Price about 20/- per cwt.

Edible Bird-Nests.—Ch. *Yin wo*; F. *Nids d'hirondelles*; G. *Indianische Vogelnester*; Hin. *Ahabel*; It. *Nidi di Tuchino*; Jav. *Sosuh*; Mal. *Sarang-burang*; Sp. *Nidos de la China*.

These edible bird-nests—or rather portions of nests—are those of a small dark-coloured species of swallow, which inhabit certain rocky coasts in the Eastern World. The birds are known as *Collocalia esculenta*, have a greenish hue on the back, and a bluish one on the breast, and have no white marks. Various types of the species are found in Sumatra, Java, Borneo, Celebes, Andaman, and other islands in the East Indian Archipelago.

Large quantities of the nests are received at the British Island of Labuan, at the North of Borneo, from Sandakan Bay, and Kina Batangan River, on the east coast, where they are found on the walls of caverns in limestone and sandstone hills all along the coast.

Naturalists cannot quite agree as to what the mucilaginous substance really is—whether a kind of seaweed, like Agar-agar, or a secretion which the birds themselves discharge from their salivary glands. The nests are very much like swallows' nests, and the edible portion consists of the glutinous material forming the outer or lower part, which supports the nest proper and attaches it to the water-worn limestone and sandstone rocks and caves.

The nests seem to be used as food by the Chinese only, but they regard them as very choice delicacies, also with valuable curative properties, and will pay extravagant prices for them.

Large numbers are exported from Siam to China. The Governor of Chaiva up to the end of 1896 farmed the nests at Champawn of the Siamese Government at a rent of £2,240 a year; guards or watchers cost him another £1,000 a year.

These birds are known as Swifts, or Peale's Swiftlets (*Collocalia spondiopygia*), and build their shallow cup-like nests against the rocks and in the caves. The silvery appearance of each nest, and the absence of all but the finest threads and attachments, make it look like beautiful white gelatine.

In Singapore, which is the chief mart for this commodity, the newest and whitest nests, resembling isinglass in colour, fetch as much as 80/- to 120/- per lb., while those obtained after the young are fledged are darker in colour, and only bring 40/- to 60/- per lb. The blackest or dirtiest sell at still less. It requires about fifty nests to yield a pound; but they are commonly sold by the "catty"—say, *white* at 45/-, dark or red 20/-, and black at 4/2 per catty. The gathering and drying cost very little, hence the price is nearly all profit to the respective potentates of the islands where the birds congregate, and

where they are jealously guarded as valuable State property.

The nests are readily soluble in alkaline solutions, but scarcely so in hot water, and still less in cold. The Chinese carefully wash them several times, picking out any feathers, bits of sticks, dirt, and other impurities, and then stew them into a gelatinous pulp, after which they are added to soups, etc., to which they impart a peculiar rich, spicy, and aromatic flavour. These dainties are usually served at the close of a repast, and at the rate of about a nest and a half to each Celestial guest, but they do not appear to have any more real nutritive or medicinal qualities than ordinary isinglass.

Edible Earths.—The inhabitants of many countries, especially during famine and times of scarcity, use certain kinds of earth as food. In Spain a kind of earth known as *bucaro* is eaten; the Russian peasant partakes of his *rock-flour;* the Thuringian of his *rock butter;* the Swede of his *bergmehl,* or mountain-meal; the native of Java of an earth known as *teneampa;* the Hindoo of the so-called *Patna-earth;* the Persian of a species of soil known as *Gheli giveh,* and a peculiar white clay found near Kum, in that country; the poorer classes in the Neograd district of Hungary eat an earth chiefly composed of lime and carbonic acid; another kind of air-dried powder, consisting mainly of alumina, is mixed with flour by the Laplanders and made into bread, and a clay, mostly silica and alumina, found in Mackenzie County, South Island, New Zealand, is said to be largely eaten by sheep.

Edible Oils. — F. *Huiles comestibles.*

The "Comestible," "eating," or alimental and cooking oils comprise Olive oil, Refined Cotton-seed oil, Beech-nut oil, Dogwood oil, Linden-seed oil, Kapok oil, Poppy oil, Safflower oil, Sesame oil, Sunflower-seed oil, Ground-nut or Arachis oil, Brazil-nut oil, etc., and these are described fully under their respective names.

They should not only be free from the least taint in taste or smell, but possessed of a delicate, appetising flavour. They are apt to turn rancid if kept too long, but may be considerably rectified by filtering through charcoal which has been soaked with a solution of soda. In case of a large quantity, it is best to filter it through a cask which has the bottom perforated with a number of small holes. The inside of this cask should then be lined with flannel, and over this a layer of impregnated charcoal six or eight inches thick, to which another layer of animal charcoal may be added, if the oil has to be decolourised.

Many refiners now mix two or three vegetable oils together, so as to produce a special blend of their own, and then register it under some fancy name.

Eels or Snigs. — These fish (Anguilla vulgaris), chiefly found in warm fresh water rivers, meres, lakes, and ponds, are considered very nutritious, and their consumption in great cities is very large. Nearly 1,000 tons come from Holland yearly. The Dutch shippers keep them alive in tanks, and send them to Billingsgate in cargoes as required. There are three or four species of eels, viz., the sharp-nosed, which is the kind usually seen; the broad-nosed, or glut-eel, and the yellow snig-eel. The Conger-eel is a larger marine species, but coarser flavoured. Young eels are often called "grigs." Eels cannot bear much cold, and, although usually buried in mud or sand, often perish in severe winter weather.

Effervescent Citrate. — A name applied to imitation citrate of magnesia to evade the *Food and Drug Act.*

Eggs.—Da. *Eg;* F. *Œufs;* L. *Ova;* G. *Eier;* Port. *Ovos;* Rus. *Irka;* Sp. *Huevos;* W. *Wyau.*

The world's egg trade is gradually acquiring increased importance. The value of eggs and poultry imported into England from abroad increases yearly, altogether amounting to about half the cost of our Poor-law administration. They arrive from France, Germany, Italy, Austria, Denmark, Canada, Ireland, Belgium, and Russia. Canada now

sends us four times more than the United States send; while the English farmer only looks on and grumbles, or, with his landlord, asks for *duty* to be imposed, or for each egg to be marked, so as to hamper the trade.

The yearly consumption of eggs per inhabitant in England has been calculated approximately as follows:—1811 to '30, 40; 1831 to '50, 48; 1851 to '70, 60; 1871 to '80, 65; 1881 to '88, 70; 1889 to '93, 80; and 1895 to 1900, 85.

France is particularly celebrated for its egg products, and the hatching and rearing of poultry is there a lucrative industry.

The chief ports for shipping are St. Malo, Rennes, Honfleur, and Havre. The dealers collect the eggs daily with systematic regularity from the farmers, and take special care to ship them *fresh*—hence the preference and high prices these obtain. They are often consumed in England within three days of being laid, whereas English and Irish eggs are carried to the markets only once a week or fortnight, and are liable to be two, three, or four weeks old before they are actually eaten.

The London Egg Market, Ltd., the chief market in England for eggs, is held at Nos. 8 and 9 The Hop Exchange, Southwark Street, London, Monday forenoon being the busiest time, when immense numbers change hands. Terms, 7 days and dis. 2d. in the £1. For broken or bad eggs half a hundred (60) eggs on every case, 30 on half a case.

As eggs contain all the essentials for the nutrition of a young animal, they form, like milk, a highly nutritious diet for adult organisms. As is generally well known, they contain albumen, fat, lecithin, and phosphates.

The average weight of the newly-laid egg is about 2½ ozs., and its specific gravity from 1·080 to 1·090. The "white" usually weighs 1½ ozs., the yolk almost ¾ oz., and the shell and skin about ¼ oz. The real value of an egg, however, depends not only upon its weight and freshness, but also on the breed of the fowl. The freshest eggs are the heaviest, and placed in water sink to the bottom, while stale eggs float on the top. The age of eggs may thus be closely estimated by their density:—Dissolve a given weight of salt in ten times its weight of water, or, say, 1lb. of salt in a gallon of water. A newly-laid egg will sink to the bottom at once, a one-day-old egg will not quite go to the bottom, an egg three days old will be suspended in the liquid, and older ones (as well as bad and worthless ones) will float at the top, or project above the water more and more in proportion as they are older. It is also a sure sign that an egg is stale or rotten if it shakes or rattles when moved, the yolk being evidently loose.

Spotted eggs.—This is usually caused by damp, and such eggs are considered bad, even if only with a single small spot.

"Candling" eggs is a popular mode of examination to which eggs are subjected by the dealers. Newly-laid eggs appear clear or semi-transparent, with a pinkish tinge, when placed between the eye and a strong light, and have a small but perceptible division of the skin from the shell, at the large end of the egg, which is filled with air. A simple lamp for "candling" eggs has recently been patented, which enables a dealer to make the tests in any subdued light. An ordinary kerosene-burning lamp, backed by a strong reflector, furnishes the rays. The front of the lamp is shielded by an upright of black japanned tin, supplied with a broad, stubby spout, into the end of which the egg is laid. The light of the lamp is concentrated through that spout, and the egg becomes almost transparent. The larger end of a newly-laid egg also feels cold when placed against the tongue, but they are commonly examined by the light of a candle or lamp. *Fresh* eggs are thus easily known by their fulness and transparency when held up to the light.

In stale eggs the yolk is darker in colour, the air cell is large, and the germinal spot is clearly visible. A still further stage is noted when a large dark cloud is observed surrounding a large air-cell and the germinal spot. By keeping eggs they always become cloudy, and thus when decidedly stale the distinct dark cloud-like appearance is discernible opposite some portion of the shell. The

first stage of decay is evidenced when the yolk has penetrated the white and the air space between the shell and the skin and fastened itself to the shell, showing the dark spot that does not move when the egg is turned. There is a constant evaporation going on in every egg from the time it is laid, so that aged eggs will generally rattle when shaken. In a fresh egg about 74 per cent. is water. With eggs a few days old, evaporation is scarcely discernible by "candling"; in the first week it is hardly noticeable, but more marked in the second, and of considerable importance in the third. This loss (evaporation) is four times greater in hot weather than in cold. Twenty-seven eggs will, at the end of six months, weigh less than twenty-two newly-laid ones of same size. Eggs weighing 10 to the pound lose double that of eggs weighing 8 to the pound, and with very small and long eggs the loss in weight assumes a still greater disproportion. There are other devices for examining eggs—

(1) A little instrument called an Egg tester is sold. It consists of a small square box, with a hole at the top to receive the egg, and another at one side to look into. By an arrangement of mirrors within the state of the egg is seen when a strong light is thrown upon it, so as to be transmitted through. If the egg be fresh, the image seen in the mirror is almost transparent, whilst, if stale, it is more or less dark.

(2) Place the egg in a hole in a piece of cardboard, holding it between the eye and the light of a candle or gas burner. A new egg will have no void, but after two days it will shrink away from the larger extremity, and the egg gradually becomes cloudy in the centre.

(3) Place the egg against the closed eye-lid, and if the end of the egg is void it will feel warm, whereas if the egg be new laid it continues cold.

(4) A way to prove bad eggs is to put them in a pail of water. If bad they will stand on their small ends (unless they have been shaken very much). If they lie flat on their side they are good enough to eat.

Farmyard fowls average 60 or 70 eggs in the year, but certain Cochin China breeds are said to lay 200 to 300. Large eggs generally have thickest shells.

The eggs of ducks, geese, and other aquatic fowls have the surface polished and lustrous. This seems a provision of nature to protect the contents from the effects of cold and damp. Hens lay more eggs during their second and third year than in their first or fourth year, and after the fifth they generally cease laying.

Weights and numbers of Eggs laid by various fowls:—			
Light Brahmas and Partridge Cochins	7 to the lb.	80 to 100 a year.	
Dark Brahmas	8 "	70 "	
Black, White, and Buff Cochins	8 "	about 100 "	
Plymouth Rocks	8 "	100 "	
Houdans	8 "	150 "	
		(If non-sitters.)	
La Flèche	7 "	about 130 a year.	
		(If non-sitters.)	
Black Spanish	7 "	about 150 a year.	
Dominiques	9 "	130 "	
Game Fowl	9 "	130 "	
Crèvecœurs	7 "	150 "	
Minorcas	7 "	180 to 200 "	
Leghorns	9 "	150 to 200 "	
Hamburgs	9 "	170 "	
Polish	9 "	150 "	
Bantams	16 "	160 "	
Turkeys	5 "	30 to 60 "	
Ducks, vary	5 to 6 "	14 to 28 "	
Geese	4 "	20 "	
Guinea Fowls	11 "	60 "	

Goose Eggs.—Geese begin to lay about Candlemas, and lay 9 to 11 eggs, but, if well fed and the eggs are removed as laid, 35 to 40 may often be obtained; the eggs are inferior in quality.

Duck Eggs are about one quarter more nutritive than hens' eggs, are of a greenish colour or dark white colour, and the yolk is larger and of a deeper colour than the eggs of the hen. The white also, by cooking, assumes a transparent or isinglass consistency. The keep of ducks is also cheaper. *Pea-fowl* or *Guinea-hen Eggs* have a thick and hard shell, flesh coloured, and the yolk is proportionately much larger than the white.

Turkey Eggs. — The turkey-hen ordinarily lays 12 to 20 eggs, which are rather smaller than those of the goose, and which are white mixed with reddish or yellow freckles. They are considered

very good in pastry, and, mixed with fowls' eggs, they improve omelettes.

(For *Plover Eggs* and *Turtle Eggs*, see these headings.)

The shells of all eggs are studded with small holes, which are the means of absorption and exhalation by which the young respires. These orifices are most clearly visible in ostrich eggs, but are very minute in these of small birds. As already observed, soon as an egg is laid it begins to evaporate and loses both weight and volume, especially during warm weather; consequently perfect eggs are not so readily procured in summer as in winter. If by any means this evaporative process can be stopped the egg will remain sound a very long time.

The shell of an egg is lined with a very thin but tough membrane, which, dividing very near the obtuse end, forms a small bag, which is filled with air. In newly-laid eggs this follicle appears very small, but it becomes larger as the egg is kept. In breaking an egg this membrane is removed with the shell, to which it adheres, and, therefore, is commonly regarded as part of it, which it is not. The interior consists of a viscous colourless liquid, called albumen, or the *white*, and a yellow globular mass, called the vitellus, or *yolk*. Few persons who break eggs ever notice that the "white" consists of two parts, each of which is enveloped in two distinct membranes. The outer bag of albumen, next the shell, is quite a thin watery body, while the next, which invests the yolk, is heavy and thick; but each has its use during the process of incubation. The yolk is made up of water and albumen, oil, sulphur, phosphorus, and a number of other substances. The sulphur acts chemically on silver spoons, turning them black and forming a sulphide of silver that can only be removed with the surface of the spoon itself.

The flavour of eggs is much influenced by the nature of the package, for they imbibe foreign odours with the greatest readiness. Eggs brought in the same ship as oranges take the scent and flavour of the fruit. If the cases are made of green wood, the flavour of the eggs will be injured.

Eggs keep best in a cold temperature, say 36° F. (almost freezing point), and they should be turned frequently if they are to keep good. If this be not convenient, they should be stored where there is a through draught, or over a grating, or they will acquire a musty "straw" taste.

We have seen lots of eggs which have evidently been dirty when collected, which the packers have ignorantly washed as clean as possible with the hope of increasing their value. For the most part they soon go bad and often rotten. When an egg is soaked in water sufficiently to enable one to remove the dirt from it, the gelatinous substance which ordinarily fills the pores, in the lime of which the shell is mostly composed, becomes dissolved, thus subjecting the inside of the egg to the destructive effects of the air.

A better price is usually obtained for the buff or brown-tinted eggs produced by the Leghorn fowl than for white-shelled, because they are fancied to be richer, and they look nicer on the breakfast table.

Comparatively few persons know how to boil an egg properly. They will tell you to drop it in boiling water and let it remain three minutes, and to be sure that the water is boiling; but an egg so prepared is very indigestible, and hardly fit for a strong healthy person to eat, while it would be very injurious for a delicate person or invalid. The moment it is placed in boiling water the white hardens and toughens. To boil an egg properly it should be put in cold water, placed over a *slow* fire, and the moment the water begins to boil the egg is done. The white will be found delicate as jelly and as easily digested, also nutritious, as it should be.

Fresh Eggs can be easily flavoured to suit the fancy. They absorb any odour with which they are placed in contact; and the storing of them in baskets filled with roses and violets results in a novel and pleasant experience. As already observed, fresh eggs will keep for a much longer time if turned or the position be altered from time to time, so as to prevent the yolk settling and becoming attached to one side of the egg. Some dealers, therefore, keep them in slings

so as to be more easily turned. Eggs should never be exposed to the glaring heat of the sun, nor should they be placed near cheese, fish, or other article of food from which any odour rises; oil, lard, butter, or other greasy matter also spoils their appearance. They are extremely active in absorbing power, and in a very short time they are contaminated. Eggs may be considered "fresh" during the first fourteen days after being laid.

Irish Eggs have long enjoyed a high reputation in England, and would, doubtless, maintain it if better attention were paid to cleaning, sizing, and honest packing. They would also sell much better if graded according to weight and size. They are too often either dirty or carelessly and unsafely packed in coarse, unsightly, foul-smelling cases. They should never be packed in fresh straw, however clean, but in sweet straw that has been well dried and seasoned in warehouse or stove, also in new and more attractive cases. Few buyers are indifferent to such details. But the greatest danger to the Irish egg trade is the fact that large numbers of Foreign eggs arrive at Belfast and other ports from the Baltic, and are afterwards mixed and packed in Irish cases for England. What else do they want with Foreign eggs in Ireland? Irish cases are also often refilled in England with Foreign eggs, and then resold as "Irish."

Market Weights of Irish Eggs, per great hundred (120): — Specials, 18/20lbs.; Extras (brown), 17½/18lbs.; Selected, 17lbs.; Medium, 14½/15lbs.; Chats, 12/13lbs. per 120.

Foreign Eggs are usually sold in cases of 1,440, half-cases of 720, or quarter-cases of 360, with a breakage allowance of 60 on each case; but this custom seems to prevail in the South of England only, and in the North no such allowance is made.

Imports in great hundreds (120).	1899	1898	1897
Russsia	4318601	3645903	3132333
Denmark	2266030	2019508	1748800
Germany	3454986	2821128	2971846
Belgium	2457558	2349902	2464182
France	2288562	2115096	2675667
Canada	646867	745355	568769
O. Countries . . .	742156	727690	470157
Total	16174760	14424582	14031754

This shows that in 1899 the U. K. imported nearly 2,000 millions of eggs, at a cost of nearly 6 millions of money. Most of the Russian are really the produce of Austria-Hungary and most of the Belgium are Italian and Austrian, while many from France are Austrian also.

Danish Eggs are frequently sold wholesale by weight. "The Danish Andels Egg Export," a national association of some 18,000 farmers, was formed in 1895, and has established depôts or packing-houses all over that country. An agreement is entered into by all the members to clear the nests daily, keep the eggs spotlessly clean, and deliver weekly to the depôt or packing-house. Any infringement of the conditions involves penalties. This system ensures perfectly fresh and clean eggs, so that the association in exporting is enabled to guarantee perfectly new-laid eggs. Private exporting merchants are, of course, intensely opposed to the plan, but it has succeeded by leaps and bounds.

Russian Eggs.—There are in St. Petersburg, Odessa, and the principal towns in the south-west organised native and foreign companies, which have a large number of agents travelling through the towns, villages, and farms, who buy up enormous quantities of fresh eggs. Russia is, in fact, one of the largest egg-producing countries in the world. The exports to Western Europe in 1897 were close on 30,000 tons, equal to about 430 million eggs!

The principal markets are Kozlow, Riga, Orel, Warsaw, and Libau.

The eggs are carefully packed with kiln-dried straw or shavings in cases, which are immediately sent to the central agency for transhipment abroad, especially during May, June, and September, but July and August are too hot. Eggs can be delivered in England within twenty-one days from the farthest districts of Russia, and from many districts within fourteen days. Each Russian case contains 1,500 eggs, and thousands of cases are dispatched. Germany takes most and England comes next; but from the sea passage

and damp climate of England they will not keep over twenty-one days after arrival, and are frequently very dark in colour, inferior, and sometimes almost useless. Russian eggs weigh about 105lbs. per 1,000.

Canadian Eggs promise well, and fetch better prices than Irish. They weigh 15 to 17lbs. per great hundred (120), while the best Continental weigh 13 to 15lbs. only.

In *Belgium* they are sold wholesale by weight; a case of 1,440 (10 gross) averages about 55 kilos nett. British traders. also, are beginning to require guaranteed weights per 120, so as to compare with Continental prices.

Austrian Eggs weigh about 110lbs. per 1,000 and *Italian* about 118.

Eggs should never be packed in cases made of green timber, but from boards which have been well seasoned. Wood wool is considered far safer than straw for packing eggs, as it has no fusty smell; but, of course, kiln-dried straw is much better than straw, containing all its natural moisture. As already stated, Irish eggs are often spoilt in flavour by persistent carelessness in this respect. Damp straw or hay soon leads to mustiness, decay, and putrefaction. The shell of the egg being porous, the contents are easily affected by any strong odours. Cardboard cells and soft spruce shavings are probably best of all.

It has long been felt that eggs should have a more definite classification than is conveyed by the ordinary market terms "Extras," "Selected," Re-selected," "Ordinaries," etc., these words being somewhat vague, and often inaccurately employed. The terms "New laid" and "Fresh" are also quite unreliable, the former often being four or five weeks old.

Eggs are more plentiful in summer than in winter, and although fowls may to some extent be induced to keep on laying longer by feeding them on morsels of uncooked beef and fat, and by mixing a little cayenne with their food, yet eggs are every winter 35 to 55 per cent. dearer than in summer.

Preserved or *Pickled Eggs.*—Many careful experiments have been made during the last ten years. It has recently become very common, when eggs are cheap and plentiful, to import foreign, and even Irish, eggs, and store the cases in cold chambers, until newly-laid eggs become scarce and dear. Owing to the development of the system of refrigeration on shipboard, Australian eggs are now put on our markets in such condition that they pass readily for newly-laid eggs; but this management is not generally practicable, nor is it advisable.

The best method of preserving eggs, and one that may be depended upon, is to get the eggs fresh as possible—or at most not more than 12 or 14 days old. Tap them gently against each other to make sure they are all sound, or a broken one may afterwards go bad and injure the flavour of the lot. Pack the eggs carefully in a clean jar, keg, or other water-tight vessel, arranging each egg small end down. When the vessel is nearly full fix a few clean wood splints over the eggs so as to keep them from floating. Then pour in a *solution of waterglass* until the eggs are well covered, tie a piece of paper over to keep dust out, and stow away in a cool pantry or cellar. The solution is only a mixture of crude waterglass (price 10s. per cwt.) and water—say, 1lb. of unrefined waterglass, dissolved in 1 gallon of clean water which has been boiled. It must not be poured on the eggs until it is cold. The cost is altogether trifling—about a halfpenny per score of eggs—and every egg should keep good six or nine months at least, and their "whites" may be afterwards beaten to a froth; but, being thus coated with waterglass, the eggs are apt to crack or burst in boiling, thus letting in water, unless before cooking, the shell be pierced with a needle.

2. Another way is to rub each egg over lightly with waterglass (unmixed with water), covering every part of the egg, so as to render it air-tight. Then pack the eggs in a box or jar, and cover it over with paper to keep them clean.

3. Another reliable method is to rub the eggs over with a rag or sponge smeared with vaseline or petroleum jelly.

4. The pickling of eggs in lime is an old Dutch process, first introduced into England in 1788, and still much in vogue. Mix in a wood or brick vat, or cask, say 20 gallons of water, 4 gallons of fine slacked lime, and 1 gallon of salt. Add a little fresh lime-water once a week, or else hang a bag of fresh lime now and then in the water. These lime plans are much the same. Take care the lime and eggs do not cake at the bottom. The water must have as much lime as it is capable of holding, but the lime must not be thrown into the eggs or it will be sure to cake at the bottom. The better plan is to make the lime-water first, and see that there is no sediment. When wanted for use the lime coating is easily removed by pumping water on the eggs.

Numerous other methods of preserving eggs are in use. The idea of all of them is to keep air out of the eggs, as by such absence of oxygen, decay can be arrested for a considerable length of time, especially if the eggs are perfectly fresh at the start and are kept in a cool, dark place.

When taken out of pickle they are apt to deteriorate, like fresh eggs, and are undoubtedly fittest for cooking purposes.

On breaking a pickled egg it will be noticed the white of the egg has become quite thin and watery. They should in all cases be preserved while fresh.

Chinese Method.—Immense numbers are preserved in Chinkiang, especially duck eggs, ducks being very prolific in that region, and it is no unusual thing for a farmer to keep 4,000 or 5,000 ducks under his care. The process is very curious. A lye of bean-stalk and lime is made by burning these to powder. This is boiled in water, black tea leaves and salt in certain proportions being added. The boiling is continued until all the water has evaporated, and the residue becomes caked and hard. This is pounded and the fresh eggs are placed therein, one by one, with a little rice husk. These remain in the preparation 100 days, when they are ready for use, or will keep good 10 or 20 years. The egg treated in this way looks like a ball of dry clay. For transport they are usually packed in sacks with rice husks. In China, however, these eggs rise in value according to age. After 25 years they are considered exquisite to the taste, having undergone a kind of transformation, the result of which is that the yellows have become a kind of dark brown, and the whites also brown, resembling meat jelly. Such eggs are usually reserved for ceremonials and great occasions, but not having tasted them we cannot recommend them!

Many thousands of cases of preserved eggs have been coming to this country every year. Belgium perhaps sends the most, but as that country cannot really produce enough for her own consumption, eggs are extensively imported there from Italy, Austria, Russia, etc., and are consequently somewhat deteriorated by transport first to Belgium and thence to England.

But it seems likely that in future imported eggs may be kept in cold storage for several months till the market prices suit the merchant. Whether such eggs will be allowed to be retailed as "fresh" remains to be seen. To sell pickled or preserved eggs as fresh is a fraud punishable by fine or imprisonment. Doctors often prescribe their convalescents new-laid eggs, as these are more easily digested, but pickled eggs might cause serious results.

Handy Egg Tables.

Per 120			Per
s.	d.		shilling.
4	6	equals	27
4	8	„	26
4	10	„	25
5	0	„	24
5	3	„	23
5	6	„	22
5	9	„	21
6	0	„	20
6	4	„	19
6	8	„	18

Per 120			Per
s.	d.		shilling.
7	1	equals	17
7	6	„	16
8	0	„	15
8	7	„	14
9	3	„	13
10	0	„	12
10	11	„	11
12	0	„	10
13	4	„	9
15	0	„	8

No. per 1/-.	d.							each d.	Per 120.
6 =	3	for	6					2 =	20/-
7 „	3	„	6*					2* „	17/1½
8 „	4	„	6		d.			1½ „	15/-
9 „	3	„	4	2	for	3*		1½* „	13/4
10 „	5	„	6	3	„	4*		1¼* „	12/-
11 „	5	„	6*	3	„	3½		1¼* „	10/10½
12 „	6	„	6	4	„	4		1 „	10/-
13 „	6	„	6*	4	„	4*		1* „	9/3
14 „	7	„	6	4	„	3½*	d.	1* „	8/6¾
15 „	8	„	6½	5	„	4	3 for 2½	d. 1 „	8/-
16 „	8	„	6	5	„	4	4 „ 3	2 for 1½	1 „ 7/6
17 „	8	„	6*	5	„	4	4 „ 3	2 „ 1½	1 „ 7/0½
18 „	9	„	6	6	„	4	3 „ 2	2 „ 1½	3/4 „ 6/8
19 „	8	„	5½*	6	„	4*3	„ 2	2 „ 1½	3/4 „ 6/4
20 „	10	„	6	5	„	3	2 „ 1½	„ 1½	3/4 „ 6/-
21 „	10	„	6	5	„	3	4 „ 2½	2 „ 1½	5/9
22 „	11	„	6	5	„	3	4 „ 2½	2 „ 1½	5/6
23 „	11	„	6*	5	„	3*4	„ 2½*2	„ 1½*	5/3
24 „	12	„	6	8	„	4	4 „ 2	6 „ 3	5/-

* Advantageous to seller.

Price per 120. s.	d.		Price per doz. d.
4	7	equals	5½
4	9	„	5¾
5	0	„	6
5	5	„	6½
5	7½	„	6¾
5	10	„	7
6	0½	„	7¼
6	3	„	7½
6	8	„	8
6	10½	„	8¼
7	1	„	8½
7	6	„	9
7	11	„	9½
8	1½	„	9¾
8	4	„	10
8	6½	„	10¼
8	9	„	10½
9	2	„	11
9	4½	„	11¼
9	7	„	11½
9	9½	„	11¾

Price per 120. s.	d.		Price per doz. s.	d.
10	0	equals	1	0
10	5	„	1	0½
10	7½	„	1	0¾
10	10	„	1	1
11	0½	„	1	1¼
11	3	„	1	1½
11	8	„	1	2
11	10½	„	1	2¼
12	1	„	1	2½
12	3½	„	1	2¾
12	6	„	1	3
12	11	„	1	3¼
13	1½	„	1	3½
13	4	„	1	4
13	6½	„	1	4¼
13	9	„	1	4½
14	2	„	1	5
14	4½	„	1	5¼
14	7	„	1	5½
14	9½	„	1	5¾
15	0	„	1	6

Special Firms.—Henry Bird, 15 Farringdon Road, London E.C.; John Hayes, egg exporter, Tralee, Ireland; M. & W. Jones, exporters, Villa Nova de Gaya, Portugal; W. A. McKnight (Canadian), 24 and 26 Mathew Street, Liverpool; J. J. Metcalf & Co., 45 Whitechapel, and 21, 23, and 25, Sir Thomas Street, Liverpool; George Wall & Co., Ltd., Liverpool and Manchester (see advt. page 10); Thos. Wilson & Co., Hood Street, Liverpool.

Egg Colouring.—This usually consists of sugar coloured by the addition of aniline dyes. Powdered turmeric is also used.

Egg Julep.—The majority of egg juleps are nothing but alcoholic solutions of soft soap suitably perfumed. In some recipes, however, the white of egg is used, as this has a very decided fixing property on the hair. Example: Soft soap 1 oz., whites of two eggs, essence of opoponax 4 ozs., glycerine 4 ozs., and rose water to make up 4 ozs.

Dissolve the soap in 10 ozs. of the rose water, gradually rub down the white of egg with another 10 ozs. and the glycerine. Mix, add the perfume, and then enough rose water to make up 2 pints.

Egg Plant.— F. *Aubergines;* G. *Melanzäpfel.* (See also *Vegetable Marrows.*)

Egg-plant, or *Solanum melongena*, is a member of the *Nightshade* family, and known by several names. Throughout the East it is a favourite food, and called *Brinjal* or *Aubergine*, but this latter is hardly identical, though closely allied.

In the United States, where it is also popular, it is called *Jew's-apple, mad-apple*, etc. It thrives in most of the warmer climates, and is often cultivated in English hot-houses, but suffers greatly from the attacks of the potato bug. It is an egg-shaped fruit, akin to the tomato, but varies in colour from a yellowish-white to violet or dark purple, and the plants, set out about 3½ feet apart in rich ground, grow about 2 feet high. The fruit of the egg plant is highly esteemed either sliced and fried, or in soups. It is, however, more popular in France, Italy, and America than in England.

How cooked in New Orleans.—Slice the plant into pieces about quarter of an inch thick, sprinkle with salt and pepper (perhaps cayenne is best), and then with flour cook it like a pancake in a frying-pan, with a little butter or olive oil, but be sure and fry brown in the fat first a few thin slices of onions, and when brown remove them from the hot oil. Time, ten minutes.

Egg Powders.—Generally composed of rice flour, bicarbonate of soda, and a little tartaric acid, coloured

slightly with either turmeric, chrome yellow, or an anfline dye; say, half a drachm of finely-powdered turmeric to each pound of the mixture.

Example:—Mix 2lbs. carb. soda, 2lbs. cream tartar, ½lb. tart. acid, ¼lb. ground turmeric. Some are merely tinted corn-flour mixtures—say, 32 parts corn-flour, 1 turmeric, 4 sugar, and 2 of powdered gum tragacanth, flavoured with vanilla or lemon, and well mixed.

Others are made up chiefly of dirty or discoloured rice concealed in colouring and flavouring matter.

The public in buying egg powders often think they are getting some kind of concentrated essence of egg, powdered egg, or some ingredient similar to egg itself, and we have heard of them being given to children under the impression that they were very strengthening. It is obviously incorrect and improper to apply the name to eggless powders, for they usually differ only in colour from baking-powders. One concoction, widely advertised, consists of, say, 36 parts corn-flour, 1 turmeric, 4 sugar, and 2 of powdered gum tragacanth, the whole being mixed and flavoured with a little vanilla. Some sorts contain large proportions of alum, as much as 40 per cent. having recently been found in a noted make.

Gardner's patent "Rapid" sifter and mixer freely used for above. Prices from 50/- to £100. Catalogues from Wm. Gardner & Sons, engineers, Gloucester. For a very good powder apply to The Easteleine Co., Newbury, Berks.

Eggs, White of (also known as *Desiccated Egg*).—White of egg (*Albumen ovi*) is nearly pure albumen dissolved in water. The substance appears in a beautiful crystalline form, very like fine gum arabic, and will keep good for many months. When required for use it is dissolved in tepid water for a couple of hours, and the liquid can then be beaten to a good firm snow, just like fresh egg.

It is used as a glaze or varnish for photographs, and for clarifying various liquids, wines, syrups, jellies, etc., also for making meringues, nougats, icing, pastry, etc. Some is used in calico printing and as an antidote for certain poisonous substances.

Large quantities are exported in tins from Russia and Germany. Commercial qualities are classified as (1) free from acids and odourless, (2) fine, (3) ordinary, and (4) powdered.

This preserved white of egg is only about half the price of fresh eggs. A substitute often used by confectioners is made by melting 2 ozs. French medal glue in a quart of boiling water.

In 1897 a German firm started an albumen factory at Wuhu, in China, where ducks' eggs only cost, say, 3/- per 1,000, and girls for separating the yolks from the whites can be hired in any number for about 1/3d per week. Other factories have been since established, and there are now six in China—five German and one French—but the price of eggs has risen to 16s. per 1,000. A thousand eggs yield 13 to 15lbs. of albumen, which is sold at about 3/- per lb., and the yolks are employed in the tanning industry.

The yolk of the eggs after separation from the white is passed through two sieves—one coarse and one fine—and it is then run off into vessels holding about 20lbs. each, in the form of a yellow, even running liquid, of the consistency of rich cream. It is then poured into vats holding about 100lbs. and a 10 per cent. solution of salt, borax, and an unrevealed chemical then added for the purpose of preservation. The mixture is stirred until it assumes the consistency of thick molasses and of a dark orange colour, and is then poured, or rather forced, through a funnel into a cask holding about 500lbs. This is used in the preparation and dressing of superior leather goods, and is in great demand in England, France, and Germany. (See also *Liquid Eggs*.)

Apply to C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Egg Yolk.—The yolk of eggs is sold in casks of about 4 cwts. each, as well as in tins. There are three commercial classes, (1) fresh preserved, (2) 12½ per cent. salted, and (3) dry powdered. It

is mostly imported from Russia and Germany.

The Armour Packing Co. has also embarked in the business of separating the whites and yolks of eggs, canning them separately, freezing them, and unloading them on the market, and has succeeded in creating a great demand for their new product. As they are canned at the present time, some 30 dozen eggs are put up in a two-gallon can, which is exactly the number that a case holds. When a baker uses 30 or 40 dozen eggs in a day, it takes time to break the eggs and separate them. The new plan saves time. Egg yolks are also employed in glove making and the preparation of calf-kid leather.

Egg yolk may be preserved for some time without losing its clearness or colour and without acquiring any smell, by adding to it 5 per cent. of neutral sulphate of soda, either in a powder or concentrated solution.

Apply to C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Egyptian Coffees comprise the coffees of the Upper Nile region, that grown around Berber and the Soudan, also including small African varieties, very little being grown in Egypt itself. Being the product of different districts, they vary in size and quality, ranging from small to medium, of pale-green colour, flat or regular shaped, but yield superior liquors.

Many of the smaller berries are put up in Mocha grass-mat bales at Alexandria, and sold under the name of "Short-berry Mocha," and are known to the initiated as "Alexandrian or Egyptian Mochas."

Elatchee. — An Eastern name for *Cardamoms*, which see.

Elder-berry Wine. — F. *Vin de Baies de Sureau*; G. *Hollanderbieren wein*; It. *Vino di grani di sambuco*; Sp. *Vino de granos de sahuco*.

A grateful wine made from the bright crimson juice of the small black berries or fruit of the elder shrub, *Sambucus nigra* (not the *alder* tree), which is common all over Britain, and is one of the few large shrubs that grow well in large towns.

The young leaf-buds are exceedingly purgative; cattle will not eat them, and even mice, rats, moles, etc., will avoid their proximity. The dried white flowers are often used for flavouring wines and confectionery, and the ripe berries are said to be largely used in England for the adulteration, or fabrication, of port wine.

Elder berries have an acidulous and sweetish, but somewhat unpleasant, taste. The inspissated juice is often employed as an aperient and a diuretic.

Elder wine is usually flavoured strongly with cloves and other spices, and often drunk hot, or mulled, with toast. Considered to be laxative, and good for coughs, colds, sore throats, etc., also for gout, rheumatism, and syphilitic eruptions.

How made.—Pour 3 gallons boiling water on 20lbs. ripe elder berries, free from stalks. Let stand for 24 hours, then break up the fruit, strain, press, and filter through a bag.

To every gallon of the juice add 3lbs. white sugar, ½ oz. freshly crushed ginger, 1 drachm cloves, 1lb. stoned Valencia raisins (not Sultanas). Boil the mixture for an hour, skimming thoroughly during the process. Let it cool at 98° F., strain into a clean cask, add 2 ozs. yeast for every 9 gallons of the liquor; let it ferment for 14 days, then add 5 fluid ozs. brandy for every gallon of liquor. Finally, bung up tight, and let it alone for 6 months before bottling off.

Eleme Figs.—(See also *Figs.*) — A choice quality of dried Smyrna figs, "*Elémé*" being a Turkish word for "hand-picked."

The bulk of the fruit is grown on the lowlands, and 50,000 or 60,000 camel-loads are carried into the port of Smyrna every year from the surrounding country; but a great portion is, of course, only shipped as "naturals." Elémé figs are the kind commonly used for dessert and usually packed in small square boxes, with a few bay leaves interspersed among the fruit to protect it from the

ravages of a destructive grub with which it is liable to be infested.

Eleme Raisins.—These are imported from Turkey, and generally shipped from Smyrna. They are a long raisin, "hand-picked" from the stem, light brown in colour, mostly used for ship stores, and of but little interest in England. The new fruit reaches here about October.

Elephant Coffee, or *Victoria Coffee.*—These are cheap compounds of roasted sugar-beet, mixed with chicory. They may be produced for less than 2d. per lb.

Elephant Pepper.—A larger variety of *Long Pepper*, which see.

The roots and stems, slightly dried, form the *Pippula moula*, a popular and stimulating medicine of the East Indies.

Elixirs.—See *Liqueurs.*

Elva or **Elvas Plums.**—A variety of dried prune from Elvas, the strongest fortified little town in Portugal (near Badajoz). They usually come packed in boxes, but also in tins of 1lb. to 4lbs. each, and are used as dessert fruit. Wholesale prices, 6d. to 10d. per lb.

Embden Groats or **Grits.**—(See also *Groats.*)—So called from being originally prepared at Emden (formerly spelt Embden), in North-west Germany, and consisting of oats which have been hulled or decorticated, and then broken or crushed into small flat pieces.

Leading Manufacturers. — Keen, Robinson & Co., Garlick Hill, London, E.C.

Emmenthaler Cheese.—A Swiss product, of large size, over 1 cwt. It consists of water, 45·2 per cent.; fatty matter, 28·2; caseine, 23·2; and salts, 3·4. An improvement has lately been made in the porousness of these cheese, but the soft parts are still very imperfect. This make of cheese is extensively imitated in Italy, Bavaria, and North-east Germany. (See *Swiss Cheese.*)

Emery.—F. *Emeri;* Ger. and Sw. *Smirgel;* It. *Smeriglio;* Rus. *Nashdak;* Sp. *Esmeril;* W. *Mwn haiarn.*

Emery Board, Emery Cake, Emery Cloth, Emery Hones, Emery Paper, Emery Powder, Emery Stone, Emery Wheels.

Emery itself, which derives its name from Cape Emeri in the Island of Naxos, is a hard granular mineral or iron ore of a bright grey colour inside, but of a dusky brownish-red outside, and next to the diamond in hardness. It is, however, neither more than less than an impure form of the mineral *corindum*, and the best. It ordinarily consists of about 86 parts of alumina, with about 3 parts of silica, and 4 parts of peroxide of iron, and 1 part not separated; and its value depends upon the nearness of its approach to pure alumina.

It is found mostly in amorphous or large boulder-like masses of no determinate shape or size, in several islands of the Greek Archipelago, particularly in Naxos, also in some parts of England, Germany, Italy, etc. Over 10,000 tons a year are now exported from Smyrna, where banks of emery are very common, particularly in the region of Anatolia, but they are only worked when near the railways, and the quality is inferior to that of Naxos. The plain and red Naxos emery, which contains neither gold nor silver, comes from the copper mines; it is therefore superior to that met with in iron mines, and which is of a blackish colour.

Although so hard a mineral as this can only be quarried with considerable difficulty, yet the methods employed in Greece are of the most primitive character imaginable. When a block is discovered it has to be broken up, so as to be carried more easily to the coast for export. Fires are, therefore, lighted round it, so as to materially increase any natural fractures or cracks which the stone may show. Steel levers and wedges are then employed till it is reduced to sizeable fragments for carrying on mule back. Naxos stone, in England worth about £4 a ton, is broken up and pulverised by machinery.

The Greek Government allows only the best stone, of guaranteed quality, to be exported, and this amounts to about 4,000 tons yearly.

In the preparations referred to the stone is first broken up and crushed to powder, and the powder is then sifted into various degrees of fineness, from the size of pepper-corns to flour or impalpable dust, which are carefully numbered according to the meshes of each sieve.

These powders, which are very rough and sharp, are afterwards stuck on boards, cloths, papers, etc., by first applying a coating of glue and then covering with the proper grade of coarse or fine powder.

Used for cutting, grinding, burnishing, and polishing purposes, with or without oil, by lapidaries, opticians, cutlers, masons, goldsmiths, locksmiths, glaziers, and other artisans in same way as glass paper.

An impalpable powder of Silica, made from a calcedonic rock in Vermont and used for the same purposes as emery, is sold under the name of American Polish.

Emery Board is made by mixing cardboard pulp with emery dust and then casting in cakes.

Emery Cake is composed of emery thoroughly mixed in melted suet and beeswax, and then forming it into solid lumps of suitable sizes.

Emery Cloth is a fabric coated with hot glue and then dusted with powdered emery.

Emery Paper is prepared in the same way.

Emery Stones are also formed of coarse emery powder, mixed with about half its weight of good Stourbridge loam and water, sufficient to make a stiff paste, which is then forced into a metallic mould by a powerful press. They are next exposed to almost a white heat. Sometimes the stone itself is worked with water, pressed into shape, and used alone without any admixture of loam.

The value of emery stone depends upon its abrasive power, the amount of work it will do on glass, steel, etc., before reduction to an impalpable powder which has no longer any cutting action. The abrasive powder depends almost entirely upon the percentage of anhydrous oxide of alumina contained in the mineral. Some—perhaps most—of the best emeries carry also a small percentage of titanates, but as the amount of these rarely exceeds five per cent. they may be left out of consideration. The principal impurities in emery consist of salts of lime and iron.

A practical way of testing emery is, therefore, to rub a plate of glass of known weight with a certain quantity until it has no further effect; the lighter the glass has become the better the emery.

For *Emery Wheels* only about a fourth of loam is used. (See also *Glass Paper* and *Sand Paper*.)

Enamel.—F. *Emaux*; G. *Schmelz*; Sp. *Esmaltes*.

This word is a corruption of the French term, *en email*. There are several descriptions of enamel. The ordinary kind met with is a semi-transparent or vitrified substance made of common glass, fused with oxide of tin, and is used in making dial-plates for watches, etc.

Enamel Paints.—These paints have come very much into vogue during the last few years, and are mainly used by amateur painters and artists, although a very large quantity are consumed by ordinary painters for surfaces where a very high polish is desired.

They are prepared from copal, kauri, and resin, dissolved in methylated spirits or shale spirit, are of all colours, and produce a hard and more lustrous coating than is left by paint, hence they are very popular for home uses.

Being professedly made to resist hot water, they are well adapted for painting baths, etc.

Special Firms.—Morris & Jones, 13 to 19, Sir Thomas Street, Liverpool (also special agents for *Maurice's Porcelline Co.*); Paton, Calvert & Co.'s "Komo" Black Enamel for Grates, etc., Leeds Street, Liverpool (see "*Komo*").

Enameline (Stove Polish). — See *Black Lead*.

Endive or **Winter Lettuce.**—F. *Chicorée*; G. *Endivie*; It. *Endivia*; Sp. *Endibia*.

This hardy annual, *Cichorium endivia*, is of the same genus as chicory, and native of the East Indies; but is cultivated as a garden vegetable about London, also more extensively in Holland and France.

In the latter country it is very popular, seasoned with garlic, and often eaten boiled, but generally the leaves are tied up, blanched, and used as a salad and garnish. It should always be crisp and succulent.

It used to be considered an invaluable antidote to scurvy, and was a fashionable vegetable in the time of Queen Elizabeth. Two distinct types or species are now cultivated, chiefly in market gardens and those of the wealthy; one is the curled form and the other the broad flat-leaved, known as the Batavian, and there are various forms of both, especially the curled.

ENDIVE AND FLOWER.

The green-curled kind is the principal one, as it best endures wet and cold; white-curled is, however, best for summer and autumn use. The *wide-leaved*, or Batavian, is mostly used in soups, stews, etc.

Endive requires much cleansing, as insects generally find their way right into the heart; but a dish of it well blanched and set round with slices of highly-coloured beet is very pretty. Some of the French selections of the *green curled* are extremely handsome, the leaves in some cases being most delicately and exquisitely cut.

Endive is chiefly imported, *viâ* Paris, from December to August. Prices, 1/- to 1/9 per dozen heads, and in tins of ½lb., 1lb., and 2lbs. each. Also from Holland, in hogsheads, price 30/- to 40/- each.

Epps's Cocoa.—It would be rather difficult to tell the majority of grocers more than they know about this familiar cocoa, for it has often been described by different writers, but the following notes, culled from various sources, may interest some readers. Although the cocoa only came prominently into public notice about 1850, few articles have ever attained such a wide popularity, and fewer still such a *lasting* success. We believe the mode of preparation owed its first inception to the late Dr. John Epps, Homœopathic Physician at the West End of London, who invented it for the special use and delectation of his clientèle. Its very agreeable character and beneficial results, however, soon spread, and attracted the attention not only of the Homœopathic world but of many of the most distinguished personages throughout the country. Mr. James Epps, the first Homœopathic Chemist established in this country (1839), and brother of the inventor, undertook its manufacture at his laboratory in Bloomsbury, and the allopathic public soon gave it the name of "Homœopathic Cocoa." In spite of the jealous feeling then existing in medical circles against anything *Homœopathic*, the demand rapidly increased, and necessitated a special establishment for its production. A steam factory was fitted up in the Euston Road, opposite the Marble Works, which have so long formed a landmark in that region. Here the business was, with frequent extensions, carried on for some 20 years, until its requirements quite outgrew the area available in that locality. It was no uncommon occurrence in winter for the factory to be a month or six weeks behind orders. In 1879 the present magnificent edifice, built and equipped

at a cost of something like a quarter of a million, was opened. Viewed at a distance, Epps's Cocoa Factory is seen to dominate the Surrey end of Blackfriars Bridge, almost as effectively as St. Paul's Cathedral does the Middlesex end. Whether the architect had this latter as his model or not we cannot say, but the resemblance has often been noticed.

In 1893 the firm, for family convenience, turned itself into a private limited company, with Mr. James Epps, the original manufacturer, at its head, and with Mr. Hahnemann Epps and Mr. James Epps, jun., as co-directors. It is under the assiduous management of these gentlemen that the business is still carried on. The chief aim has always been to produce the *highest quality* of cocoa, with all the nutritive elements of the bean in a thoroughly soluble form, so as to be easy of digestion. Unlike most other preparations of cocoa, none of the rich properties of the cocoa are abstracted, but the whole of the nib is, by Epps's method, utilised and made ready for the cup of the consumer. As is well known in Mincing Lane, only the highest qualities of cocoa beans are selected; no artificial flavours or colourings are employed; and the rest is left to the discernment of the drinker. Those who know best the individual attention bestowed on this cocoa say that greater pains could not be taken with it if every pound were for the Royal table! As may be imagined, such efforts are bad to beat, and the business still grows in various directions. It is probable that the export to the British Colonies and foreign countries now approaches, even if it does not exceed, the Home consumption. Indeed, large quantities of the prepared article go back to be drunk in the very countries where the raw beans are grown. The provincial grocer visiting London needs no "sky signs" to direct him to Epps's Cocoa Factory, for, amid the crowded city streets and noisy traffic, the grateful aroma pervading the air a mile around unmistakably announces the proximity of the familiar breakfast and supper luxury.

But, although no one has ever heard a word of complaint of the *quality* of Epps's Cocoa, there have been outcries about the smallness of the grocers' profits in selling it. Being a standard article at a standard price, well known to everybody, it has more than any other article been used by "Cutters" as a bait to catch customers. Instead of selling it at the moderately low rate of 1/4 per lb., several retailers, in competition among themselves, got it down some time ago to 1/1, and many sold it at a dead loss.

In response to numerous appeals from grocers that the firm should assist them in stopping this state of things and in maintaining a fair retail price, a plan was devised in 1896, and submitted for the individual opinion of about 100,000 traders in all parts of the Kingdom. By this plan 1/2 per lb. was suggested as the *lowest* price at which the Cocoa should be retailed. The replies in favour of that figure were practically unanimous, there being only about a dozen dissentients. Messrs. Epps at once decided to adopt the plan, and agreed to supply no one directly or indirectly who should sell below the minimum of 1/2. They also offered a special bonus of 2 to 3¼ per cent., varying according to business done, to all who faithfully carried out the rule. These conditions having been for the last four years firmly adhered to, irrespective of individuals or companies, the grocers' profits on Epps's Cocoa have considerably improved, and the retailer is enabled to secure about 15 per cent. Turned over often enough, this percentage should be fairly satisfactory!

Epsom Salts (*Sulphate of Magnesia*).—F. *Sels d'Epsom.*

Obtained from several sources, but originally as a saline efflorescence from certain bitter purging water-springs at Epsom, in Surrey—whence their name—and sometimes from sea-water. They are now chiefly made in the North of England from magnesian limestone, or dolomite, by treating it with dilute sulphuric acid.

Epsom Salts are very popular as a useful and mild aperient medicine, especially in feverishness, disorders of the liver, and in constipation, and they are considered a valuable antidote in cases of lead poisoning.

Epsom Salts are very cheap, but have sometimes been found adulterated with chalk, chloride of magnesia, and other substances.

They are usually packed in tierces, kegs, or bags, and should be kept in a dry place. It is a great fashion to buy them ready packeted, but these often get damp, stained, or soiled, and unsaleable, and it is best to keep them loose, and weigh up clean and fresh as required.

Erbswurst, or **Pea Sausages.**—A renowned make of German sausages invented by M. Grüneberg, who received £5,000 for the recipe from the Prussian Government. Said to be composed of a well-cooked purée of peas, mixed with a certain proportion of bacon or lard, seasoning, etc., and dried so as to be portable in a very small compass. It has been considered a unique food for supporting muscular activity and exposure to cold. This particular sausage owes its celebrity to the fact that it formed the chief food of the German army throughout the Franco-German war of 1870.

Ercoos or **Erquoos.**—A beverage made in Egypt from liquorice, and there used as are tea and coffee in England.

Ergot, or *Secale Cornutum*, is the fungus (*Claviceps purpurea*) of the diseased seeds of common rye. It is a purple-brown, or violet-coloured, spindle-shaped sclerotium, or compact mass of fungoid mycelium or spawn, from ½ inch to 1½ inches long, and entirely replacing the grain. Its use as a medicine was one of Hahnemann's discoveries, but when taken incautiously produces convulsions, gangrene, and death by poisoning.

Erunda. — A common East Indian name for the seed of the castor oil plant.

Ervalenta. — A botanical name applied to several compound cereal foods. The word itself is from *ervum lens*, signifying ground lentils or lentil flour. (See *Revalenta.*)

Warton's is said to consist of French or German lentil flour, mixed with either Indian corn or Durra (*Sorghum vulgare*), a species of corn largely grown in Arabia.

Some makes of Ervalenta are composed of the flour of French beans and Indian corn.

Eschalots. — Better known as *Shalots*, which see.

Eschalot Vinegar.—Generally made by infusing bruised shalots a few days in commercial acetic acid, and afterwards diluting with water to the strength required. It is used for flavouring soups and other dishes.

Esparto Grass. — Used in paper-making, and mostly comes from Spain and North Africa.

Essence de Portugal.—An essential oil made both at Nice and Grasse, in the Alpes Maritimes, from the skins of the bitter orange.

Essences.— (See also *Cocoa Essences*, *Flavouring Essences*, *Meat Extracts*, etc.)—The modern use of this term has a very wide significance, but in this country an essence is generally a solution of some fragrant essential oil with alcohol. The usual difference between an essential oil and essence thus consists in the essence being a *spirituous preparation*, whereas an oil is either expressed or distilled. It is, however, a common custom in America to call essential oils "essences," and hence confusion often arises. Essences are sometimes prepared by infusing the odoriferous parts of plants, etc., in rectified spirits, or by simply mixing the essential oil with rectified spirits. Essential oils, if very thin and clear, are very often called essences even in this country. Each kind is described in this book under the name of the substance from which it is derived.

Essential Oils. — F. *Huiles essentielles;* G. *Atherische oele;* Sp. *Aceites esenciales.*

These are the ethereal or volatile oily substances which occur already formed in the stems, leaves, flowers, or fruits of many aromatic plants, and give them their characteristic odour. They appear to be chiefly derived from certain orders of Rutaceæ, Myrtaceæ, Umbelliferæ, Compositæ, Labiatæ, Lauraceæ, and Coniferæ, but although thus confined to a relatively few natural orders, they are

found in all parts of the plants, and are obtainable by maceration, fermentation, and distillation with water.

They are called oils because they stain paper like oil, but under the influence of heat this stain, instead of increasing, disappears.

The most common sorts are the butter or oil of almonds, bergamot, carraway, cassia, cloves, nutmegs, lavender, lemon, mint, mustard, thyme, otto or attar of roses, etc. The generality of the plants yield their maximum of essence when they are dealt with in their fresh condition, but a few produce most when they are dry.

The substances are first either cut to pieces, incised, rasped, ground, or crushed, and placed in three or four times their own weight of water for macerating. After soaking 12 to 48 hours, according to their dryness or tenderness, they are ready for distilling. (Some light essences extracted from fresh roses and a few other flowers may be distilled without previous maceration.) The matter being placed in the still with the water in which it has been macerated, 15 to 20 per cent. of sea salt is often added to prevent boiling. (Salt water only boils at 229° F., but ordinary water at 212°.) Heat is then applied (either steam or fire heat will do), and the essence mixed with aqueous vapour is thus distilled. During the process the vapour of the oil to which the fruit or flower owed its odour has temporarily united with the vapour or steam of the water, but when cooled they separate, and the oil, now called *Essential Oil*, finally floats pure and colourless on the top of the water. The value or quality of essential oil is determined by diffusion and smell. Anyone thoroughly familiar with the odour of the pure oil may generally detect adulterations by letting a single drop of the oil fall on the back of the hand and then rubbing it about with a finger of the other hand. After the oil is partly volatilised, the odour may readily be detected.

Essential oils have always been an object of particular attention on the part of sophisticators; they are often adulterated with olive oil and others having the like odour, or even with alcohol and fatty oils, but the added oils may usually be detected by placing a few drops on a sheet of white paper and then drying it at the fire; if pure, no stain of oil will remain on the paper. If a resinous substance has been added, a small oily spot or stain will remain with a strong resinous odour. If alcohol has been added, this evaporation test will not discover it, for the spirit of course goes off with the heat, but if a few pieces of chloride of lime be introduced into the adulterated essence, these combine very readily with the alcohol and extract it from the essence. Another test for alcohol is quite as simple. The essential oil is poured into a tall narrow glass cylinder until it reaches a given mark. Then a quantity of water is added, and the whole well shaken together. If when the oil and the water are again separated, the oil occupies a less space than before, it is evident it contained alcohol, which is now combined with the water. Essential oils also often contain water, even though apparently clear, but by adding to a sample three or four times as much of petroleum ether of specific gravity 0·65 to 0·67, this speedily separates the drops of water, and renders the liquid more or less cloudy. When exposed to the air, essential oils absorb oxygen and soon acquire a consistency of resin.

The valuation of essential oils is incontestably one of the most difficult problems, for there are few chemicals so artfully sophisticated. A chemist cannot do much in detection unless his knowledge be supplemented in him by a highly developed sense of smell and taste. In some cases, indeed, a valuation is almost quite out of the question, since the most approved methods are of a very imperfect nature, and it is a curious fact that in many instances the chemical constituents upon which their value depends are not definitely known. In other parts of this book a few particulars will be found under the name of each oil. The Mitcham mint, lavender, and camomile oils fetch higher prices than any of foreign production. Large quantities of essential oils come from Alpine and Algerian flowers. Every season when

the Alpine flowers of lavender, spike thyme, etc., reach maturity a whole army of itinerant distillers with their apparatuses invade the Alps as far as the Piedmontese valleys to distil the oils. Essential oils, being soluble in alcohol, are now often made into *Flavouring Essences* for flavouring culinary preparations, also made into perfumes, scents, etc.

The essence industry in Sicily is both widespread and prosperous, and essence producers and exporters are numerous. Especially is this the case with the essences derived from the rind of all varieties of the citrus group, albeit they differ considerably in quality. That expressed from bergamot rinds is the best, then follow in order named lemon, orange, and citron essences, the relative values of the essences being in inverse order to that of the juices. Unfortunately, the essential oils are scandalously adulterated. Even after being analysed and sealed up, the coppers are often tampered with, and a portion of the oil replaced with turpentine through a little hole made somewhere in the solder line, where it can be closed up again without being noticeable.

But, in addition to the foregoing, we have also an ever-increasing class of artificial products passing in commerce as "Essential oils," or essences. Chemical research having discovered several compound ethers not yet known to occur in nature, but which, in conjunction with certain acids, are distinguished by smells so sweet as to entitle them to be placed among valuable essences, many of them have acquired a well-established place in the market, and have become articles of regular manufacture, under the names of Pear Oil, Apple Oil, Grape Oil, Pine-apple Oil, Essence of Melons, Essence of Quinces, etc. Potato ether is the base of most of them. (See *Pear Oil.*)

These artificial productions are now largely employed by confectioners, sugar boilers, etc.

Essential oils, essences, and perfumes should always be kept in close vessels well corked and from the light. Further details may be found in Sawer's "*Odorographia*," and in Power's "*Descriptive Catalogue of Essential Oils and Organic Chemical Preparations*," published by Frische Bros., New York.

For all kinds of Essences, apply to Charles Cocks & Co., Reading; C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.; or Gio. Restuccia & Co., Messina, Sicily.

Essex Cheese.—A poor, hard kind generally made from thrice-skimmed milk, and very like to Suffolk cheese.

Ethiopian Pepper.—F. *Poivre de singe.*

A name given to the dried carpels of the fruit of the Xylpia aromatica, which is largely used as a pungent condiment in Central Africa.

Eucalyptus.—The Australian gum-tree which produces a medicinal oil and comes from Australia, South Africa, and Algeria.

Eugenia.— This is the fruit of the shrub *Eugenia* (*Myrtus*) *Ugni*, a native of Chili, where it is much esteemed.

It is the size of a large black currant or small cherry, somewhat flattened, globular, and crowned with persistent calyx teeth, brownish-red or glossy black, with an agreeable aroma. The pulp is light-coloured, soft, and juicy, with a sweet and spicy flavour, which is very pleasant to the palate.

The expressed juice, mixed with water, is a refreshing drink of aromatic odour.

Eulachon, Fish and Oil.—This fish belongs to the family of salmonidœ, and bears the scientific name of *Thaleicthys pacificus*, and is nearly allied to the capelin. The bays and estuaries of the Pacific coast of British America and Alaska are annually visited by immense shoals of them. They are popularly known as *Candle fish*, or adopting the vernacular name, as *Eulachon* or *outachon*. The Indian name is variously spelled *Eulachon*, *eulachan*, *hoolacan*, *ootachon*, etc., and is corrupted by the English settlers in Victoria as "hoolakins." One species is known in Oregon as "smelt."

This over-named fish is scarcely a foot in length, has a large mouth, pointed,

and conical head; colour, greenish yellow on back and silvery white on sides and belly. They are chiefly eaten by Indians, but make excellent pan fish, and, being very rich in oil, this is now "rendered" or manufactured, on the Naas River, as a substitute for cod-liver oil.

So rich in oil is the entire fish that when dried it serves the natives for torches, whence the name "Candle fish." Dried and salted, this fish has now become an important article of export from Victoria.

Evaporated Fruits. — (See also "*Dried Fruits.*") These generally appear very flat, thin, and shrunk, but having considerable absorbent properties they swell up surprisingly after being soaked a few hours in clean water.

The kinds of fruit most commonly sold evaporated are:—

Apples (American, the best). See *Apples*, also *Normandy Pippins* and *Norfolk Beaufins.*

Apple Rings and "Chops," or Sliced Apples.

Apricots in bags or boxes are very delicious when moderately cooked; Australians are the best flavoured.

Peaches, Raspberries, Cherries, Blackberries (three latter are better known in America), Pears, French and American (the latter being best and cheapest), Plums (stoned), etc., etc.

Fruit in order to be suitable for drying must possess the following qualifications:—The flesh must be firm and meaty and the juice rich in sugar in order to produce a heavy dried fruit, and the fruit should in no case be dried till thoroughly ripe, or it will weigh light and be of inferior quality. The following are some of the best drying fruits:—

Peaches, Free-stones. — Crawford's Early, Lady Palmerston, Muir, Salway, Crawford's Late, Susquehanna, Comet. Yellow-fleshed free-stone peaches having red at the pit are usually preferred, though any of the yellow cling peaches that are good canners also dry well.

Apricots.—The Moorpark leads, drying heavier than any other apricot, but all those mentioned as suitable for canning can also be dried. The Alsace, an apricot of the Moorpark type, is said to be giving great satisfaction as a drier and also to be a regular and heavy bearer.

Plums.—In addition to the various prunes used for drying, several varieties of plums dry well, the following being of especial merit:—De Montfort, Prince Englebert, Angelina Burdett, and Coe's Golden Drop.

Pears.—The best drying pear is the Williams' Bon Chrétien, as it retains its full flavour.

Apples.—The following varieties dry well:—Gloria Mundi, Granny Smith's Seedling, Cat's Head, Mobb's Royal.

"*Chops*" are apples sliced with the seeds, skins, and stems, dried and exported in old sugar barrels.

In boxing the fruit the layer intended for the top is put in first, an ornamental paper or lithograph is laid down, and covered with selected pieces of the fruit carefully flattened out, as it always pays to make the fruit look attractive as possible when opened. Peaches and apricots should be quite ripe when dried, whether peeled or unpeeled. The peeling is done either with the use of lye or by hand, after the fruit is sulphured. If with lye, a boiling solution of caustic soda—1lb. of caustic soda to 10 gals. water—is prepared, and the fruit immersed in it for 2 or 3 seconds, when the skin may be easily rubbed off. The peeled fruit must then be quickly rinsed in cold water, or the lye will turn it a dark colour. Smyrna figs remain on the trees till dead ripe, and are then dried in the sun without any dipping.

Dried Vegetables.—These are dealt with in much the same way, and large quantities prepared at Nice are exported from Bordeaux.

The economy in using evaporated or dried fruits and vegetables does not seem to have appeared to a good many persons. They think only of the trouble attending the selection and preparation of the fruit, and compare it with the ease with which the fresh fruit or the contents of a can are dumped in. But at all times good evaporated fruit is cheaper than canned, and when the latter is scarce and high, as it often is, and poor, too, the difference in favour of evaporated fruit is most marked. Here is a confectioner's way

of handling it:—"Select the fruit that you intend to use, rinse it thoroughly in clear pure water, then place the fruit to soak in an earthen dish, with sufficient hot water to cover it, from ten to fifteen hours before requiring it for use. Then place it on the back of the stove in the same water in which it has been soaked, which contains the flavour and nutrition soaked out of the fruit, and allow it to simmer slowly, just coming to a boil occasionally, until it is entirely cooked through; add sugar as the occasion requires to make it palatable. It can be served either hot or cold. As a rule, if it is placed on one side and allowed to cool it will be equally relished. By this method you will secure a wholesome and palatable dish, full flavoured, and resembling in appearance, size, taste, and flavour the original green product as near as is possible.

Most fruits are better and more valuable when evaporated by machinery than when merely dried in the sun, or even kiln-dried. (Much useful information on this subject appears in the *Society of Arts Journal* of May 1st, 1896, pp. 540-51.)

Everton Toffee.—Originally made, about 150 years ago, by Molly Bushell (née Margaret Cooper), Everton, Liverpool. It was in what is now known as Village Street, near the top on the left hand (where now stands the Wesleyan Chapel), that this person, in 1753, first made the toffee with which the names of Bushell and Everton are inseparably associated. Subsequently, a little lower down the village, Molly built for herself a new house and shop, which still remains, and where she continued to carry on the toffee and confectionery business, together with that of a small farmer. This kind of toffee is now manufactured by most confectioners, and is simply brown or moist sugar boiled in the usual manner with more or less of good or inferior butter, flavoured with lemon and run out in a sheet, from an eighth to half an inch thick. While warm it is either cut or marked out in squares, or it may be broken up when cold.

Exhausted Tea.—(See also *Maloo Mixture, Lie Tea, Tea Substitutes*, etc.)—The Food and Drugs Act, 1875, Clause 31, defines Exhausted Tea to mean and include any tea which has been deprived of its proper quality, strength, or virtue, by steeping, infusion, decoction, or other means.

The Inland Revenue authorities some time ago found a factory in London where *exhausted tea-leaves* were made to resemble good class tea. The manipulators of this ingenious swindle bought used tea-leaves from the large hotels and restaurants, "fired" and treated them by what was called the "Carrol" process, and sold the product to some of the largest packet tea firms in the country for admixture with genuine tea, and, although the Inland Revenue authorities knew the firms who perpetrated this fraud, they did not prosecute the packet tea merchants. We do not know why. It may be that we have a few Tammanys of our own, of which less is said in the English press than is written of the American one.

Extracts. — The term *extract* is generally applied to those preparations obtained by evaporating expressed juices, or the decoctions, infusions, or tinctures of vegetable or animal substances, until a mass of a solid, semi-solid, syrupy or fluid consistence is formed. Extracts differ from Essences, in that the former are less concentrated and usually contain water, alcohol, ether, or other matter, in which the base or extract itself has been dissolved. When water is employed, they are called *aqueous extracts;* when spirit is used as the solvent, they are called *alcoholic extracts.* When underproof spirits are used they are termed *spirituous extracts;* when acetic acid is employed they are distinguished as *acetic extracts.* Sometimes ether is used, and then the extracts are called *ethereal. Simple Extract* is a term applied to an extract prepared from a single plant, seed, fruit, flower, or other vegetable substance. A *Compound Extract* is one prepared from two or more of such substances.

Extracts and Essences of Meat.—See *Meat Extracts*, etc.

Extract of Herbs.— Mr. Adams, Mansfield, manufactures a concentrated preparation for making true *Herb Beer*, "composed of judiciously Selected Herbs, in combination with Hops. It contains in an admirable and attractive form valuable tonic, stomachic, and dietetic properties, and there is an entire absence of undesirable mixture in any form. It produces a beverage of high merit, refreshing, palatable, and wholesome." Extract from Analysis, by G. H. Sharpe, F.C.S. Supplied in 6d. bottles, sufficient to make 8 gallons.

Extract of Soap.—(See also *Washing Powders.*)—A fair quality is made as follows:—Soap, 14 parts; Soda Crystals, 30 parts; and water, 55 parts. The whole well mixed, dried, and pulverised. (This closely resembles Hudson's.)

Extractum Carnis. — See *Meat Extracts* and *Essences, Liebig's Extract*, etc.

Extrait d'Absinthe. — A liqueur made in Switzerland.

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Face Powder.—An excellent face powder is made by mixing 23 parts Precipitated Chalk, 24 French Chalk, 7 Bismuth Sub-carbonate, 17 Zinc Oxide C.P., and 30 parts Corn Starch; perfume with oil of rose to suit. If it is desired to make it a flesh colour, carmine may be added.

Fachingen. — A German mineral water with acidulated, gaseous, and alkaline properties. It is a very pleasant and refreshing beverage, and is used in gouty and nervous affections, dyspepsia, heart-burn, etc.

Faham or **Fahran Tea.** — (Also known as *Bourbon Tea.*)—A name given in the Mauritius to the dried leaves of a fragrant orchid, *Angræcum fragrans*, which owes its odour to the presence of coumarin. It is a very agreeable drink, although less stimulating than ordinary tea.

The infusion is drunk to promote digestion, and is said to be useful in certain lung diseases.

Falernian or **Falernun.**—A liqueur made in the West Indies from rum, lime-juice, and sugar. It is prepared both white and brown, and may be used as a flavouring with any other kind of wines or spirits, also in soups.

Family Syrup.— This is a mere concoction of glucose and water, coloured and flavoured, to imitate Golden Syrup. "Amber Syrup" and "Table Syrup" are similar deceptions.

Fancy Soaps. — (See also *Soaps*, etc.)—Fancy soaps, mottled, streaked, or tinted, which are made in great variety for the toilet, are usually scented with some aromatic oils. For this branch of the trade the ordinary commercial or "stock" soaps are used, after undergoing a process of refinement, or a soap is especially made for the purpose from almond oil or the like. Much taste is shown by the best makers in the selection and combination of the perfumes, which, along with the colouring matters, such as vermilion, yellow ochre, aniline, etc., are usually boiled up with the soap. To facilitate this operation, as a well dried soap does not readily melt, it is usually cut up into fine shavings, and after warming is well worked under rollers until it presents a uniform appearance. If the soap is intended to be highly scented, or very expensive perfumes are to be employed, the cold process, known as "milling," is adopted, as much of the strength of the scent is lost by boiling. In this case the soap is shredded as before, and the perfume and colouring matters well amalgamated with it by being worked in a mortar with a pestle. It is then divided into lumps, and roughly moulded with the hand into something of the shape it is finally to assume. After being left on a rack to dry for about a week, it is pressed into a mould which

imparts to the cake the form and device which may be required, and when taken out the edges are trimmed, and the surface polished by hand with a cloth or piece of felt, moistened with spirit. In many cases exposure to wet steam for a few seconds develops on the surface a film or glaze possessing an admirable gloss without any further manipulation; but in the best soaps it is the natural result of using Naples soft soap as a base in the manufacture.

Most of these fancy soaps will be found more particularly described under their respective titles.

One of the judges at a recent International Health Exhibition wrote:—"To a great extent the public has only itself to blame, inasmuch as it persists in demanding articles to be supplied at prices incompatible with high quality, whilst it takes no pains to protect itself against the numerous frauds, adulterations, and misrepresentations thereby rendered inevitable, many of which would be punishable were toilet soaps and similar articles to come into the category of food, drink, and drugs, so that penalties would attach to the selling of goods under false names, such goods not being of the nature and quality demanded.

"It is true no particular harm is done to a purchaser of a cake of honey soap, should such soap contain no honey at all, as is usually (though not invariably) the case; but if an article is advertised as superior to others and sold at an enhanced price, on the ground of its being said to contain certain ingredients which are not present, as, for example, in the case of soap said to contain a high percentage of *glycerine*, or advertised as specially suited for application to the skin, because *sulphur* is an ingredient, when, in point of fact, no trace of sulphur or glycerine is present, it is evident that the purchaser is just as much damnified as he would be, were he to purchase 'bosh butter,' or margarine, at the price of genuine cow's butter, or were skimmed or watered milk sold to him instead of the unsophisticated article.

"That soap makers do not look at the matter from this point of view, however, is evidenced by the fact that at the International Health Exhibition, not one but several makers exhibited and supplied to the jury, for analysis, soaps stated to contain glycerine (in one case 30 per cent. being guaranteed), all of which were actually entirely devoid of that constituent, sugar being in some cases substituted for glycerine, in others not. Similarly, various other soaps were exhibited professedly containing certain other ingredients, notably milk, sulphur, arsenic, etc., all of which were really conspicious by their absence."

It may seem invidious after all that has been said and advertised about soaps (and what has not) to advise that if you have been out all day, or come from a journey, or if you have had a hard day's work, and you want to get thoroughly clean, don't wash your face with soap and water. Grease or oil is far better, as it enters and cleanses the pores of the skin. Learn a lesson from the actresses. If an actress were to wash with soap and water the nightly make-up from her face she would have no skin to speak of in a week, to say nothing of a complexion. Apply a little grease or oil, and then after a few minutes rub thoroughly, first with a soft towel and then with a piece of chamois leather. To demonstrate that this cleanses the skin more thoroughly, some day, after a journey, just wash your face with soap and water as well as you can; then cover it with grease or oil and remove with a soft cloth. One glance at the cloth will show that soap and water did not get it clean.

Apply to F. Newbery & Sons (English soaps), 27 and 28 Charterhouse Square, London, E.C.; Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool.

Farina. — (See also *Semolina* and *Fecula*.) — A Portuguese word for "meal." The term literally means the flour of any species of vegetable tuber, or starchy root, such as sago, tapioca, arrowroot, and sometimes includes rice, wheat flour, bran, semolina, or wheat pastes. The original was probably the powdered root of the plant Mandioca (which see), and is used largely in South America, where it is merely heated and

pressed into thin cakes like the oatmeal cakes of Scotland.

The name *Farina* is now ordinarily limited to a purified starchy powder made from potatoes. Price about fifteen shillings per cwt. The potatoes are first washed and peeled, then reduced to a pulp, and the fibrous matter separated from the starch by washing.

Apply to M. E. Holdsworth, 3 Norfolk Street, Bradford.

Farinaceous Foods.—See *Prepared Foods*, *Breakfast Cereals*, etc.

Farls, or Scotch Farls.—(See also *Oatcakes.*)—A sort of three-cornered oat-cake or biscuit, a thin circular cake of flour or oatmeal, being stamped by a stout tin cutter into quarters or thirds before baking. Originally called "girdle farls," from the fact of their being fired on a "girdle," or flat iron plate.

They are usually made in two sizes, halfpenny and penny. After being made they are laid down near the fire, when they assume a curled or curved shape.

Faro.—A cheap and inferior quality of Belgian beer, very popular about Brussels, where the consumption is from seven to eight million hectolitres yearly.

Farro. — Polish wheat, *Triticum polonicum.*

Fecula. — F. *Fécule.* (See also *Gluten.*)

The starch obtained (in the form of granules of different shape and size) from certain plants, seeds, tubers, and roots, by grinding them and washing them in water. The fluid is then allowed to stand a few hours, and the fecula, or starchy substance, settles to the bottom. When obtained from cereals or fruits this amylaceous substance is usually called *starch*, but fecula when got from potatoes, manioc, yams, and similar legumes.

Unlike sugar, *Fecula* is not fermentable until it be first made into sugar by the use of agents like sulphuric acid.

Fedelina. —(See also *Pastes.*)—A fine kind of Italian paste in a thread-like form, and of smaller size than vermicelli.

Feeding Stuffs.—F. *Engrais.* (See also *Poultry Foods.*)

There are many of these lines which might be taken up with advantage.

They are all legitimate and profitable commercial products, and, once started, will probably be found a permanent source of gain. They include:—

Bird seeds.	Locust meal.
Calf meal.	Maize (Indian corn).
Canary seed.	†Maltsprouts.
Cattle foods.	Maw seed.
Chick peas.	†Molasses.
*Cocoa-nut cake.	Molasses mull.
*Cotton-seed meal.	Oil-cakes.
Cotton-seed cake.	*Palm-kernel cake.
Dari seed.	Pig food.
†Dried beetroot pulp.	Poultry food.
†Dried brewers' grains.	*Rapeseed cake.
†Dried distillers' grains.	*Rice and rice-meal.
*Ground-nut cake.	†Rye bran.
Hemp seed.	*Sesamé cake.
Linseed.	†Wheat bran.
Linseed cake.	&c. &c.

Those marked * are often adulterated with weed seeds, obtained in cleaning grain before grinding, and which are often more or less injurious and poisonous—such as the seeds of henbane, spurge, crowsfoot, yellow-rattle, ergot, etc.

Those marked † should contain from 6 to 30 per cent. of protein, and up to 23 per cent. of fat; but they are often found adulterated with sand, talc, lime, oxide of iron, and manganese.

Care should also be taken (in buying or becoming agent for patent preparations) to avoid impure, adulterated, or injurious compounds, and fraudulent or useless manufactures.

Artificial "*cattle foods*," as a rule, consist mainly of powdered locust beans.

Feeding stuffs should each contain definite proportions of one or more of the following essential ingredients:—Digestible protein, fat, sugar, and extractable non-nitrogenous matter, and should at same time be clean and wholesome.

In purchasing, the guarantee of "pure" should be insisted upon, since this means a legal warranty that the article is produced from good clean seed.

The terms "best" and "genuine" are of no value, and should never be relied upon. The sample and bulk should be subjected to analysis occasionally.

Apply to Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool.

Feljoes. — Small beans, black, white, and variegated, mostly grown in Brazil.

Fennel. —F. *Fenouil;* G. *Fenchel;* It. *Finocchio;* Port. *Funcho;* Sp. *Hinojo;* Sw. *Fenkal;* W. *Ffenigl.*

An aromatic biennial herb (*Fœniculum capillaceum*), growing three or four feet high, with yellow flowers, cultivated in gardens as a pot herb, but is indigenous to the countries bordering the Mediterranean. Its soft thread-like leaves are boiled and served with salmon, mackerel, etc., as a seasoning. Its seeds possess a spicy agreeable flavour, and are used in cookery, and sometimes chewed by the country people in France and Germany. There are several varieties, more or less bitter, aromatic, or sweet. The young sprouts make a good salad. The seeds are long and very like anise fruit, but usually larger. The taste and odour are also similar. The German, French sweet, and the Indian seeds are the largest, and the Italian and Japanese the smallest. The latter are often sold as anise. The oil distilled from the seeds is largely used in the manufacture of cordials.

Fenugreek.— (Also spelt Fenugreck and Foenugraec).—W. *Y grog wyran.*

The seed of an annual leguminous herb, *Trigonella Fœnumgrœcum* (foin grec), or *Trigonia*, so called from *treis* (three) and *gonu* (an angle), in reference to its triangular fruit, nearly allied to clover, with flowers of delicate blue colour and odour like Balsam of Peru. This odour increases by drying, so that in Italy it is used largely by perfumers, and the Swiss use it to flavour cheese. There are several varieties, all containing more or less of Coumarin. It is largely cultivated in India as a fodder plant. The oily seeds have a peculiar smell and bitter taste. A flour made from it is used in veterinary poultices and as human food. Throughout Greece and the East the seed is eaten both boiled and raw, mixed with honey.

Fenugreek is generally imported in bags, and, when ground, is often used in mixing curry powders, also for giving a flavour to inferior hay. It is quoted on the London market, Egyptian and Mogador, 8/- to 15/- per cwt.

Fertilisers, Artificial Manures, etc.—These constitute an important adjunct to the business of country grocers, corn dealers, etc. There is now a very large and increasing demand for them, and they are worth careful attention. Many of them may be purchased ready for use, others may be easily prepared in an outbuilding by the dealer himself, and sold to farmers, gardeners, cottagers, and others, at remunerative prices. Most people now know that crops, like stock, grow only in virtue of the food that is placed at their disposal, either by nature or by art, and that, like animals, plants vary in their requirements. The sources of the food of crops, as is also known, are various. Rain or atmospheric moisture and the carbon that exists in gaseous combination in the air, furnish the great bulk of the food that builds up plants, but other portions of plant-food are derived from the soil. The country grocer should remember that the four principal fertilisers are, *nitrogen*, *phosphoric acid*, *potassium*, and *lime*, and assure himself that each manure contains a reasonable proportion of one or more of these ingredients. He might also ascertain what proportion of the above ingredients different plants take out of the ground, and in what fertilisers they are contained.

It is to be noted that only those ingredients which can be subsequently recovered in the crop, and which have been absorbed in the process of growing, are effective as fertilisers. For instance, phosphoric acid and potassium are the best fertilisers for turnips and other cruciferous roots, the first being especially valuable in helping the young plant through the most critical period of its life, and the latter an indispensable element in its after development.

For potatoes, turnips, and cabbage, phosphates and potashes are also important for productiveness.

Nitrogen is almost useless alone, but

becomes serviceable as an auxiliary. A mixture of 9 cwts., made up as follows, has been found to double a potato crop:—4 cwts. mineral superphosphates, 3 cwts. potash salts, 2 cwts. sulphate ammonia (contains nitre).

For *beans*, the best way to manure is to sow superphosphate; not only will it double or treble the bean crop, but will also more than double the succeeding crop of wheat, whereas beans, when manured even highly with stable manure, if they yield well themselves, leave nothing for the succeeding cereal.

Only a few of the numerous fertilisers can be noticed here:—

Mineral phosphates. — Florida high grade rock contains 75 to 80 per cent.; Carolina land rock and Peace River rock, 55 to 60 per cent.; Canada rocks, 60 per cent.; Belgium, also Somme and Osso phosphates are of high quality, and the prices vary from 7d. to 1/1 per unit of phosphate.

Bones and *bonemeal* mostly come from River Plate, Brazil, Mediterranean, and India, and are worth £4 to £5 per ton.

Liebig's guanos and English prepared fish guanos fetch about 8/6 per unit of ammonia. *Ground hoofs*, 8/- to 10/-. *Home prepared dried blood*, 8/- to 9/-. Imported, 8/6 to 9/6.

Powder for coating seeds, sulphated bones, saline mixtures, guano substitutes, clover and other special manures, raw bones or bone dust, should be bought as "pure," and should be guaranteed to contain not less than 45 per cent. of tribasic phosphate of lime, and 45 per cent. of ammonia. "Boiled bones" should also be guaranteed as "pure," and to contain not less than 48 per cent. of tribasic phosphate of lime and 1¾ per cent. of ammonia.

Dissolved bones vary so greatly that the buyer should insist on a guarantee of quality under the heads of "soluble phosphate of lime," "insoluble phosphate of lime," and "nitrogen," or "ammonia"; also for allowances at current prices for each unit per cent. if the bones should prove on analysis to contain less than the guaranteed percentages, etc. It should be insisted that mineral superphosphates be delivered dry and in good condition, and be guaranteed to contain a certain percentage of soluble phosphates at a certain price per unit per cent. No value is to be attached to "insoluble phosphates." Compound artificial manures which are rarely used should be purchased on exactly the same terms.

Nitrate of Soda should be guaranteed to contain 94 to 95 per cent. of pure nitrate.

Sulphate of Ammonia should yield 35 per cent. of ammonia.

Peruvian Guano should be sold under that name, and guaranteed to be in a dry, friable condition, and to contain a certain percentage of ammonia. (See *Guanos.*)

Foodite, intended for horticultural purposes is the marc left after the second extraction of castor oil from the seed. Analyses have shown it to contain 7·28 per cent. of nitrogen, equivalent to 8·84 per cent. ammonia.

In buying artificial manures, the purchaser is recommended to obtain a guarantee that they shall be delivered in a sufficiently dry and powdery condition to allow of sowing by the drill. Samples taken out of three or four bags should be mixed together and analysed not later than three days after delivery. Two tins, holding about a half-pound each, should be filled in the presence of a witness, sealed up, one sent to the analyst, and the other retained for further reference.

Fiji Tea. — There are now about 460 acres planted with tea in this island. (See *Tea.*)

Fig-Tree Wax. —A vegetable wax obtained from Java.

Figs. — Ar. *Teen;* Da. *Figen;* Du. *Vygen;* F. *Figues;* Ger. *Feigen;* It. *Fichi;* Pol. *Fiki;* Port. *Figos;* Rus. *Winnua jagodi;* Sp. *Higos;* Sw. *Fikon;* W. *Ffigys.* (See also *Elémé Figs.*)

The fig (*Ficus carica*) appears to be the oldest of historical trees, and is frequently mentioned in the Bible: Deut. viii., 8; 1 Kings iv., 25; Solomon ii., 13; Jer. v., 17, etc., etc. It

was the flavour of Athens figs that tempted Xerxes to undertake the conquest of Attica (Greece) in 480 B.C.

FIG-TREE AND FRUIT.

There are about 300 varieties—green, white, yellow, brown, and black. Figs are native of the Mediterranean region, Syria, Eastern Persia, to Afghanistan.

They were cultivated in China as early as the latter part of the 14th century. They now abound in all warm climates, like India, Asia, Africa, and Southern America, and the common fig-tree is now cultivated all over Southern Europe.

It grows 15 to 30 feet high, with dark-green leaves, rough above and downy beneath. The spores are of very dark violet colour, smooth externally, globose in form, and measure 6 to 8 inches in diameter. The tree in all its parts abounds in a viscid milky juice, even in the unripe fruit.

This juice is very acrid, and is said to destroy warts, and in Pliny's time it was thought to cure the bites of venomous animals and mad dogs. The flowers are never apparent to the eye, but are contained in those fruit-like bodies produced in the axils of the leaves, and it is not until one of these is opened that the flowers are visible.

What is therefore termed the fruit is merely the enlarged fruit-stalk end, which has become fleshy, and assumes the form of a hollow body, bearing on its interior wall the flowers or fruit of the fig.

These pear-shaped fruits grow out of the limb twice, and in some places three times, a year—in June, September, and a later imperfect crop in December, but this last is very precarious.

The pulp of the fig contains over 60 per cent. of sugar. The largest and best come dried and pressed into layers in drums or in small square wooden boxes of ¼lb. to 14lbs. each, from Smyrna, in Turkey, the finest being known as Elémés (see *Elémé Figs*), new crop arriving in latter end of August or early in September. Usually packed in *skeleton cases* holding 2½ to 3 cwts. Others are pressed into bags of 14lbs. to 60lbs. each, also in mats and baskets.

Rush baskets, called "*tapnets*" are often used.

Figs are dried either in the sun or in stoves, and are usually known by the names of the places where produced.

They form the greater part of the food of certain peoples in Africa, and even the peasantry in some parts of Spain and Italy.

Three pounds of fresh figs yield only about 1lb. of dried figs.

Those from Greece are usually very small in size, very much dried, and packed in barrels or baskets, also threaded upon long rushes or *bass* strings, and not so carefully packed as Turkish—which, indeed, are the chief growth inported into England.

Faro figs commonly come in tapnets of 28lbs. and boxes of 22lbs.

In Spain figs are largely exported in mats from Malaga and Valencia, and they are more or less abundant in every province. The number of fig trees in

the Lepe and Cartaya district exceed 400,000, and produce some 2,000 tons yearly. The export from Huelva is, however, now very small, and most of them are shipped from Cadiz, whither they are sent in faluchos from Cartaya. In quality these figs are much inferior to Smyrna figs, and are principally used for cooking with rice or for making into fig cakes. All Spanish figs have a bluish cast, with a sweet and agreeable taste, but the skin is hard and thick.

In Syria, and throughout the Levant, figs are grown in great abundance, and form the chief food of the soldiers and native inhabitants.

They are medicinally a mild laxative, but (unless packed with a good supply of bay leaves) those dried entirely in the sun are frequently infested with small grubs.

The cheaper kinds, commercially known as "naturals," usually arrive in 56lb. bags or cases. They are liable to be affected with "fig smut," a reproductive parasite which commences work in the interior of the fruit, and soon converts the whole into a sooty mass.

This insect, known as the *Coccus Rusci*, is especially partial to the fig, but it is also found on other trees. The diameter of a well-developed female is five millimetres, their colour is a greyish-white, and they have the appearance of small cones upon the trunk and boughs of the tree. They cover themselves with a special substance like wax, which protects them. If this is removed with a needle the true colour beneath is seen to be a shiny reddish-brown, this being the creature's true cuticle. Raising the skin, a vast number of eggs will be observed (if the operation is performed towards the end of June), these eggs being of a reddish-brown colour. They become larvæ in the month of July, and in a few days, when they drive the proboscis into the bark, they manage to nourish themselves from the tree. Once fixed, they undergo a strange metamorphosis, for their legs drop off, their eyes disappear, and their bodies exude the waxy substance which serves them as an ultimate protection. No insecticide will affect them when once they are duly encased; but before that takes place they can be killed by syringing the trees with a solution of petroleum and soda crystals. This must be done as soon as the larvæ appear, and it will completely destroy them.

Figs are best when thoroughly ripe and not gathered till they drop from the trees, the skin slightly cracked, and the exuded juice adhering on the surface like dewdrops.

Figs are generally gathered and cured as follows:—A sheet is held under the tree, then the branches are shaken to make the ripe fruit fall. Any bruised fruit is not fit for curing. A bath of strong potash lye is prepared, strong enough to float an egg, and when boiling hot the figs are dipped into it by means of a wicker basket for the space of two minutes, and then again dipped in clear water. After dripping for a short time they are fit for drying, either in the sun or in ovens or machines. The figs may then be flattened by pressing with the hands. The sun is best for drying them; but, as already stated, flies are apt to lay eggs in them, and they may afterwards become wormy. The heat of an oven, on the contrary, is hot enough to destroy the eggs.

Pulled Figs, from Turkey, fetch the highest prices obtained for the dried kinds, and when honestly packed are decidedly the best; but there are packers who, having arranged to receive liberal advances for their products against shipping documents, are tempted to use best fruits for the top layers only, while the underneath consist of the inferior figs termed "naturals." Very few grocers notice sufficiently the costly way the finest qualities are packed.

Italian Figs are among the latest novelties. The come over in excellent condition, and (being of very fine flavour) are easily retailed at 1d., 2d., and 3d. each, according to size and appearance.

American Crystallised Figs are also of recent introduction. Being preserved in a soft fresh state, they are very delicate and highly esteemed. Usually packed in ornamental boxes containing half a gross of fruits.

French Figs.—There are also several fig gardens in the south and west of France, especially about Argenteuil and in Roscoff (Finistere), but the fruit is eaten fresh and never dried.

The blue fig, or *Violette de Bordeaux*, familiar to visitors to the Riviera, is also grown in Kent, and often makes its appearance in our markets in October and November.

Indian Figs is a name often applied to *Prickly Pears.* (See latter.)

For figs and other dried fruits apply to Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool.

corruption of their original English name of "*full-beards*," and sometimes called Jerusalem filberts. See also *Cob*, *Hazel*, and *Barcelona Nuts.*)

These are one of the best species of the English hazel nut, *Corylus avellana*, cultivated in Kent and in a few other districts. It was grown in Wiltshire as far back as 1810, but was probably first improved in Italy, Spain, or Palestine by superior soil, climate, and culture.

This nut may be easily distinguished by its elongated form, and by the lacerated and contracted form of the involucre or skinny envelope in which it grows. As with other kinds, that sort which has the pellicle which covers the kernel of a deep red colour is the most esteemed. Enormous quantities are grown in Tarragona, Spain, but

Table for Computing Cost per Box of Figs Bought at Prices from 30/- to 72/- per cwt.

Weight of Boxes.	30s.	32s.	34s.	36s.	38s.	40s.	42s.	44s.	46s.	48s.	50s.	52s.	54s.	56s.	58s.	60s.	62s.	64s.	66s.	68s.	72s.
Ozs.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.
12	2⅛	2⅛	2¼	2¼	3	3¼	3⅜	3½	3¾	3⅞	4	4⅛	4¼	4½	4⅝	4¾	5	5⅛	5¼	5½	5¾
13	2⅛	2⅜	3	3⅛	3¼	3½	3⅝	3¾	4	4⅛	4⅜	4½	4⅝	4¾	5	5⅛	5⅜	5⅝	5⅞	6⅛	6⅜
14	2¼	3	3⅛	3⅜	3½	3¾	4	4⅛	4¼	4½	4⅝	4¾	5	5¼	5½	5⅝	5⅞	6	6⅛	6⅜	6¾
15	3	3⅛	3⅜	3⅝	3¾	4	4⅛	4⅜	4½	4⅝	4¾	5	5⅛	5⅜	5½	5¾	6	6⅛	6⅜	6¾	7⅛
0	3⅛	3⅜	3⅝	3⅞	4⅛	4⅛	4½	4⅝	4¾	5	5⅛	5⅜	5½	5¾	6	6⅛	6⅜	6⅝	6¾	7⅛	7½
1	3⅛	3⅜	3⅝	4⅛	4⅜	4⅝	4⅝	4¾	5	5⅛	5⅜	5⅝	5¾	6	6⅛	6⅜	6⅝	6¾	7	7⅜	7¾
2	3⅜	3⅝	4 1/16	4⅜	4⅛	4¾	5 1/16	5 5/16	5½	5⅝	5¾	6	6⅛	6⅜	6⅝	6¾	7	7⅛	7⅜	7¾	8⅛
3	3⅝	4 1/16	4⅛	4½	4¾	5 1/16	5⅜	5 5/16	5⅝	6⅛	6⅜	6⅝	6¾	7⅛	7⅜	7⅝	7⅞	8⅛	8⅜	8⅞	9⅛
4	4	4½	4⅝	4¾	5 1/16	5⅜	5⅝	5⅝	6⅛	6⅜	6⅝	6¾	7	7⅜	7¾	8	8⅛	8½	8⅝	9⅛	9⅝
5	4½	4⅝	4¾	5	5⅜	5⅝	5¾	6⅛	6⅜	6⅝	7⅛	7⅜	7⅝	7¾	8⅛	8⅜	8⅝	9	9⅛	9⅝	10⅛
6	4⅝	4⅞	5	5⅛	5⅝	5⅞	6⅛	6⅜	6⅝	7	7⅛	7⅜	7⅝	7⅞	8⅛	8⅜	8⅝	9⅛	9⅜	10	10⅝
7	4⅞	5	5⅛	5⅜	5⅞	6⅛	6⅜	6⅝	7	7⅛	7⅜	8	8⅛	8⅜	8⅝	9	9⅛	9⅜	9⅝	10⅛	10⅝
8	4⅞	5⅛	5⅜	5⅝	6⅛	6⅜	6⅝	6⅞	7⅛	7⅜	7⅝	7⅞	8⅛	8⅜	8⅝	9	9⅛	9⅜	9⅝	10⅛	10⅝
9	5	5⅛	5⅜	5⅝	6⅛	6⅜	6⅝	6⅞	7⅛	7⅜	7⅝	7⅞	8⅛	8⅜	8⅝	9	9⅛	9⅜	9⅝	10⅛	10⅝
10	5⅛	5⅜	5⅝	5⅞	6⅛	6⅜	6⅝	6⅞	7⅛	7⅜	7⅝	7⅞	8⅛	8⅜	8⅝	9	9⅛	9⅜	9⅝	10⅛	10⅝
11	5⅛	5⅜	5⅝	5⅞	6⅛	6⅜	6⅝	6⅞	7⅛	7⅜	7⅝	7⅞	8⅛	8⅜	8⅝	9	9⅛	9⅜	9⅝	10⅛	10⅝
12	5⅜	5⅝	5⅞	6⅛	6⅜	6⅝	6⅞	7⅛	7⅜	7⅝	7⅞	8⅛	8⅜	8⅝	8⅞	9⅛	9⅜	9⅝	9⅞	10⅜	10⅞
13	5⅜	5⅝	5⅞	6⅛	6⅜	6⅝	6⅞	7⅛	7⅜	7⅝	7⅞	8⅛	8⅜	8⅝	8⅞	9⅛	9⅜	9⅝	9⅞	10⅜	10⅞
14	5⅝	5⅞	6⅛	6⅜	6⅝	6⅞	7⅛	7⅜	7⅝	7⅞	8⅛	8⅜	8⅝	8⅞	9⅛	9⅜	9⅝	9⅞	10⅛	10⅝	11⅛
15	5⅝	5⅞	6⅛	6⅜	6⅝	6⅞	7⅛	7⅜	7⅝	7⅞	8⅛	8⅜	8⅝	8⅞	9⅛	9⅜	9⅝	9⅞	10⅛	10⅝	11⅛
0	5⅞	6	6⅛	6⅜	6⅝	7	7⅛	7⅜	7⅝	7⅞	8⅛	8⅜	8⅝	8⅞	9	9⅛	9⅜	9⅝	9⅞	10⅜	10⅞
1	5⅞	6⅛	6⅜	6⅝	7	7⅛	7⅜	7⅝	7⅞	8⅛	8⅜	8⅝	8⅞	9	9⅛	9⅜	9⅝	9⅞	10⅛	10⅝	11⅛
2	6	6⅛	6⅜	6⅝	7⅛	7⅜	7⅝	7⅞	8⅛	8⅜	8⅝	8⅞	9⅛	9⅜	9⅝	9⅞	10⅛	10⅜	10⅝	11⅛	11⅝
3	6⅛	6⅜	6⅝	7	7⅜	7⅝	7⅞	8⅛	8⅜	8⅝	8⅞	9⅛	9⅜	9⅝	9⅞	10	10⅛	10⅜	10⅝	11⅛	11⅝
4	6⅛	6⅜	6⅝	7	7⅜	7⅝	7⅞	8⅛	8⅜	8⅝	8⅞	9⅛	9⅜	9⅝	9⅞	10	10⅛	10⅜	10⅝	11⅛	11⅝
5	6⅜	6⅝	6⅞	7⅛	7⅜	7⅝	7⅞	8⅛	8⅜	8⅝	8⅞	9⅛	9⅜	9⅝	9⅞	10⅛	10⅜	10⅝	10⅞	11⅜	11⅞
6	6⅜	6⅝	6⅞	7⅛	7⅜	7⅝	7⅞	8⅛	8⅜	8⅝	8⅞	9⅛	9⅜	9⅝	9⅞	10⅛	10⅜	10⅝	10⅞	11⅜	11⅞
7	6⅜	6⅝	6⅞	7⅛	7⅜	7⅝	7⅞	8⅛	8⅜	8⅝	8⅞	9⅛	9⅜	9⅝	9⅞	10⅛	10⅜	10⅝	10⅞	11⅜	11⅞
8	6⅜	6⅝	6⅞	7⅛	7⅜	7⅝	7⅞	8⅛	8⅜	8⅝	8⅞	9⅛	9⅜	9⅝	9⅞	10⅛	10⅜	10⅝	10⅞	11⅜	11⅞
9	6⅜	6⅝	6⅞	7⅛	7⅜	7⅝	7⅞	8⅛	8⅜	8⅝	8⅞	9⅛	9⅜	9⅝	9⅞	10⅛	10⅜	10⅝	10⅞	11⅜	11⅞
10	6⅜	6⅝	6⅞	7⅛	7⅜	7⅝	7⅞	8⅛	8⅜	8⅝	8⅞	9⅛	9⅜	9⅝	9⅞	10⅛	10⅜	10⅝	10⅞	11⅜	11⅞
11	6⅜	6⅝	6⅞	7⅛	7⅜	7⅝	7⅞	8⅛	8⅜	8⅝	8⅞	9⅛	9⅜	9⅝	9⅞	10⅛	10⅜	10⅝	10⅞	11⅜	11⅞
12	6⅜	6⅝	6⅞	7⅛	7⅜	7⅝	7⅞	8⅛	8⅜	8⅝	8⅞	9⅛	9⅜	9⅝	9⅞	10⅛	10⅜	10⅝	10⅞	11⅜	11⅞
13	6⅜	6⅝	6⅞	7⅛	7⅜	7⅝	7⅞	8⅛	8⅜	8⅝	8⅞	9⅛	9⅜	9⅝	9⅞	10⅛	10⅜	10⅝	10⅞	11⅜	11⅞
14	6⅜	6⅝	6⅞	7⅛	7⅜	7⅝	7⅞	8⅛	8⅜	8⅝	8⅞	9⅛	9⅜	9⅝	9⅞	10⅛	10⅜	10⅝	10⅞	11⅜	11⅞
15	6⅜	6⅝	6⅞	7⅛	7⅜	7⅝	7⅞	8⅛	8⅜	8⅝	8⅞	9⅛	9⅜	9⅝	9⅞	10⅛	10⅜	10⅝	10⅞	11⅜	11⅞
0	6½	6⅞	7⅛	7⅜	7⅝	7⅞	8⅛	8⅜	8⅝	8⅞	9⅛	9⅜	9⅝	9⅞	10⅛	10⅜	10⅝	10⅞	11⅛	11⅜	11⅞

Fig Dust.—A name among mealmen for fine ground oatmeal, sold for feeding caged birds.

Figuera. — A kind of spirit distilled from fermented figs in the Levant, Portugal, and the Canary Islands.

Filberts. —F. *Avelines;* G. *Lambertsnüsse;* W. *Cneuen ysbaen.* (A

they reach their greatest perfection in England.

After gathering they are usually laid in an airy place in the sun for a few days to dry the husks, which are generally moist at the base, then packed in tin boxes about 10 inches long, 6½ wide, and 3½ deep. After the lid is put on a strip of paper is pasted round

the top to keep it air-tight, and then stored away in a cool, dry place. Retailers often keep them in dry sweet casks and jars, and sprinkle a little salt among them to prevent mould and keep the kernels crisp. If the husks lose their colour it may be restored by holding them in a sieve over sulphur fumes, produced by burning a little sulphur over a small clear charcoal fire.

Filberts grown in the hop districts are often gathered green as soon as the kernels fill the shell, so as to have them cleared away before the hop pickers arrive; but the nuts are best left until September or October, when they fall on shaking the trees. They are then picked up, as already explained, by women and boys, spread about 9 inches thick on a boarded floor, and turned over occasionally to prevent moulding. In this way they may be kept a long time, but they are mostly marketed in December or February. They are often packed in sieves of 7 gallons each, just as they grow, with the husk on, and covered with paper, straw or coarse hay being spread over it, and this is kept in place by sticks. In Covent Garden filberts and cobs are sold by the 100lbs. (4lbs. extra being given), or else per lb., cwt., or ton.

Filbert plantations exist on a large scale in Sicily, near Piazza, Armernia and Aidone, in the province of Caltamssetta, and Palagonia, province of Syracuse. They are also cultivated in large quantities in the regions of Etna, in the valleys between Linguaglossa and Cartiglione, Randazzo, and Bronte.

Filberts are more wholesome and free from oil than any other nuts of the kind, and are considered to be in season from September to March.

Field Cheese. — See *Margarine-cheese.*

Fin, or Fins.— The singular and plural forms of the French word *fin*, meaning "fine" or "small." (See also "*Shark Fins.*")

Finings for Liquors.— F. *Clarifiants;* G. *Klaermittel;* It. *Chiarificanti;* Sp. *Clarificantes.*

Mostly made by softening isinglass with sulphurous or tartaric acids, sometimes both. If served when unready, or if treated with too much acid, little strings or shreds appear, and will neither rise to the top nor sink to the bottom, and will cause great complaints. These are chosen because they are reasonably quick in action, contain no disease germs, and are not liable to acidify the beer.

If tartaric acid be used, the crystals should first be dissolved in boiling water, say 1 oz. of crystals for each pound of isinglass; if sulphurous acid be used, 1 gallon of 5 per cent. strength for 7lbs. of fining material, the isinglass being first soaked in cold water for 24 hours before adding the acid. The isinglass must be kept covered with liquid (if for fining ales sour ale may be used) and well stirred at least once a day. In about a month it should be dissolved, and free from any but the smallest and softest lumps, and should then be passed through a hair sieve. Finings should be kept in a cool place and well covered with sacking cloth, and on top a lid.

One pint of finings should suffice to clear a barrel of ale, cider, porter, etc., and a quart for a hogshead of wine. Good finings should dissolve perfectly in water, and leave no more residue than sugar does. Finings for refining and clarifying ales, wines, vinegar, syrups, cordials, etc., may be made as follows:—

Isinglass will not dissolve in any cold liquid that does not contain acid. The quantity to make ½ gallon of finings should be only ½ oz. of isinglass.

1. Dissolve ½ oz. acid in a pint of water, then put in the isinglass, and as the matter swells keep adding water until the quantity reaches ½ gallon. This will be sufficient to fine 5 gallons of wine. Of course, this refers to real isinglass; if gelatine or *imitation* isinglass be used failure will result, because these articles do not possess fining power.

2. For *gin*, take 4 oz. subcarbonate of potash and 8 ozs. roche alum. Mix in powder.

3. *Clarifying Powders*, for red wines, etc., are also prepared from dried blood albumen, and sold at about 5/- per lb., half an ounce in a pint of water sufficing for about 40 gallons of wine.

4. Finings *for syrups* are sold ready prepared by wholesale druggists, etc., from 9d. to 1/9 per lb. One ounce dissolved in a pint of water should be added to 20 gallons of syrup before boiling. For cordials 1lb. suffices for 100 gallons.

The action of the finings seems to be purely mechanical—the gelatinous matter, slowly settling to the bottom of the vessel, carries with it the insoluble substance which has caused the turbidity.

Finnish Butter.—Five years ago this was considered very inferior, but latterly the quality has vastly improved. It was exported from Finland in 1898 to the value of 26,998,000 Finnish marks (about £1,080,000), the value of the exports to the United Kingdom being 15,643,250 marks (about £626,000). The total quantities exported were:—In 1896, 273,200 cwts.; in 1897, 286,000 cwts.; in 1898, 243,200 cwts. In 1899 the quantity exported is stated to have increased considerably, and the St. Petersburg "Zeitung" says that the quality of the butter has improved so much that Finnish butter is now ranked as high as Swedish on certain markets. Measures are being taken in Finland to assist the butter trade; in particular, Finnish steamers and railways are being provided with apparatus to keep the butter at a low temperature. It is intended shortly to inaugurate a regular weekly service of steamers between Hull and Finland; this service will be maintained in winter *viâ* Hango.

Fir-tree Oil. — An insecticide obtained from the Corsican pine (*Pinus laricio*), and to be mixed with water. It is sold in bottles, 1/6 and 2/6 each, and also in gallon jars about 10/- each.

Fire Lighters, or **Kindlers.**—F. *Allume-feux.*

1. The pieces of wood are usually dipped in the commonest liquid resin.

2. Some are dipped in a composition made of 60 parts of melted resin and 40 parts tar.

3. Melt 8 parts of resin, then add 1 part tallow, stir up, and dip each piece of firewood in the composition.

4. Same as above, add as much sawdust as can be worked in, and then form into blocks or bars, suitable size.

5. Excellent firelighters are made by agglutinating the husks of cotton-seed with melted resin.

Special Manufacturers.—Fitch & Sons, Tamworth, makers of the "Fox and Firebrand" kindlers.

Fish (Dried, Salted, and Smoked).— The preserved fish ordinarily met with are barrelled cod, dried salt cod, smoked haddock, ling, salmon, red herring, kippered herring, bloaters, and dried sprats.

The curing is not confined to large establishments, but is also done on the premises of petty vendors all the year round. Fish that is already stale and just beginning to turn is put into the brine tub for a few hours, and then rapidly smoked, sun-dried, or wind-dried. Thus cured, the fish is often bad and unwholesome, and the superficial curing merely hides its defects. Even fresh fish, if cured so quickly, would not keep good very long.

Foods rich in phosphorous, such as fish and the like, have long been held by certain people to be "good for the brain." Some have even gone so far as to declare that the brains of mankind in general are capable of being permanently strengthened and clarified by a specially prepared phosphoric dietary. But it has never been scientifically demonstrated that fish and other phosphoric foods can appreciably improve the brain and mind. Fishermen, for example, and fishmongers, who may be supposed to live largely upon fish, have never shown themselves to be in any measurable degree more intellectual than their neighbours. Indeed, it may be plausibly argued that they are a little less so. The truth is, that that

particular food which best agrees with the particular individual, and which best maintains his general health at a high level, is the best for the brain and every other organ of the body, as well as for the whole man. Common experience has long ago formulated the saying that "what is one man's meat is another man's poison." Science now comes forward to tell us exactly the same thing, and to impress upon everyone of us the necessity of finding out the diet best suited to ourselves, and sticking to it.

Flageolets, (Haricot Flageolets). —The French name for the young green and tender seeds of the finest variety of *French bean* (*scarlet runner*) or haricot bean, gathered and shelled before turning white. Flageolets are generally sold in small bottles or tins labelled as "*très fins*" (very fine or choice). When mixed in about equal proportions with the immature green pods they form the very fashionable dish known as *Haricots verts panachés*. Flageolets are also sold dry as well as in brine.

Flaked Cocoa. — F. *Cacao en feuilles.* (See also *Cocoa, Manufactured.*)

A name given to drinking-cocoa which has had a fancy or flaky form given to it by a mill consisting of two cones, one working inside the other.

It is a mistaken idea to suppose, as some do, that flaked cocoa is essentially pure, it very rarely being so, but is usually flaked after mixture with sugar and potato starch, sago flour, or other farina. When an excessive proportion of these additions is made, colouring matter also becomes necessary to disguise them.

Flaked Oats. — See *Avena Flakes, Rolled Oats,* etc.

Flash. — A compound concocted from essence of capsicum (or cayenne) and burnt sugar (or caramel), for adding to weak spirits to make them taste strong and fiery. Say ¾ pint of fluid extract of capsicum in 1 gallon of burnt sugar colouring.

Flask Oil. — (See also *Salad, Florence,* and *Olive Oils,* etc.).—This is, or should be, olive oil, put up in thin glass bottles, which are usually ornamentally wickered, and hold from 6 to 16 ozs. of oil. The oil is imported from Italy in "chests" of 60 and "half-chests" of 30 flasks.

These flasks, when empty, are often usefully made into retorts or receivers, such as are required for chemical experiments.

Flavouring or Culinary Essences. —(See also *Essences.*)

The following are the principal sorts put up:—

Allspice.	Garlic.
Carraway.	Ginger.
Cardamoms.	Lemon.
Cassia.	Mace.
Cayenne.	Marjoram.
Celery seed.	Nutmegs.
Cinnamon.	Orange.
Cloves.	Peppermint.
Coriander seed.	Spearmint.
Fennel.	Sweet basil.

These are prepared for the use of cooks, confectioners, liqueur and cordial makers, etc., in flavouring soups, gravies, sweetmeats, pastry, wines, liqueurs, cordials, etc.

The essences may be prepared by either dissolving 1 fluid ounce of the essential oil of the particular substance in 1 pint of rectified spirit, or by digesting from 4 to 6 ozs. of the bruised spice, or from 5 to 10 ozs. of the dried herb in a like quantity (1 pint) of spirit. The first method is the best, least troublesome, and yields the finest quality.

Such essences are commonly labelled "Concentrated essence of ——," or simply "Essence of ——."

Cheaper kinds are made from half the above proportions, infused in a pint of proof spirit or British brandy, and sometimes "shot whisky," instead of rectified spirit.

Penny bottles of Almond Essence (bottles, 12 to the ounce) are commonly put up by mixing and shaking together a pound of essential oil of almonds, a pint of spirits of wine, and a gill of water.

For *Lemon Essence.*—A pound of sential oil of lemon and a pound of ear cotton-seed oil. Let this stand ll clear before bottling.

Special Firms for Essences.—Charles ocks & Co., Reading, Berks; Morris Jones, 13, 15, and 17 Sir Thomas reet, Liverpool.

Flax Seed.—See *Linseed.*

Floating Soap.— This soap is a ry pretty toilet variety. It is usually ade of good ordinary wax-grain or coa-nut oil soap and water, in the oportion of 14lbs. soap to 3 pints of ater, melted, and while warm is easily aten together in a vessel containing sh wheels, and agitated until it is npregnated with bubbles of air, and ade quite light and double the iginal volume of the soap.

This lightness and buoyant character nders its use advantageous in baths, ., and gives the soap its name. It is dinarily coloured with a little vermilion, d perfumed. Floating soaps, however, ssess no other special characteristics atever, and the question is whether e fact that they will float compentes for the buying of air instead of ap.

Floor Wax or **Polish.**—Often a eparation of turpentine and beeswax, d retailed in 1/- or 5/- tins.

Examples:—1. One hundred pounds paraffin are melted and then mixed th 150lbs. of colophony. When the o are thoroughly melted and mixed gether, 10lbs. of hot olive oil are oroughly amalgamated with the mass. ne stuff is then poured into moulds d allowed to set.

2. Hard paraffin, 3,710 gm.; powred boric acid, 450 gm.; lavender , 4 gm.; neroli oil, 20 drops. The raffin is melted and the other comnents are carefully added.

3. Six parts of hard paraffin and 2 rts of yellow wax melted and mixed, d coloured with powdered turmeric.

4. One kilo of yellow wax, 1½ kilos oil of turpentine, and a little spike .

5. Two kilos of yellow cerisin, half a o of liquid paraffin, 1½ kilos of French oil of turpentine, and 2 kilos of benzine.

Waxed Colours for Floors.—(1) Yellow.—Seven and a-half pounds of caustic soda lye and 2½lbs. of yellow wax are boiled together, and then mixed with 2lbs. of finely powdered ochre, and stirred into a uniform mass. (2) Nut Brown.—Substitute umber for the ochre in the above recipe. (3) Reddish Brown.—To the above quantities of lye and wax add ½lb. of Orleans, 1lb. of burnt umber, and 1lb. of yellow ochre. All these mixtures are applied in the following manner: First brought to the consistency of a thin syrup with hot water, they are brushed on with a stiff brush, and polished when dry. One coat is generally insufficient; a second coat usually has to be applied in the same manner. Too much surface must not be covered at a time, as the stuff dries too quickly. The polishing is done with a stiff brush and finally a woollen cloth.

Florence Oil or **Cream.** — See *Olive, Flask Oils, Salad Creams,* etc.) —Once an esteemed and superior quality of Italian olive oil, prepared in Florence, and exported in flasks, but now rarely pure.

The Tuscans were the first to export olive oil largely, and thus arose the name "Florence Oil." (See also "*Tuscan Oil.*")

Florida Oranges. — (See also *Oranges.*)—The Riverside, Washington, and Navel varieties are the most popular. Crop now 4,000,000 to 5,000,000 boxes a year, but ten years ago it was only some 600,000 boxes.

The earliest varieties are eatable in September, and in fact most fruits are a month earlier in Florida than in any other State in the American Union.

Owing, however, to tenderness of skin, Florida oranges travel badly, and the cost of transit to England militates against a large trade.

Florida is about three days' distance by quick train from New York, and the oranges often get frostbitten in

transit, which imparts a dark brown leathery colour to their skin.

Florida Water.—F. *Eau de la Floride.*

A colourless toilet fluid, like Eau de Cologne. This refreshing Eau de toilette has usually a spirituous, not an aqueous, basis. Although not so well known in England as Eau de Cologne and Lavender water, it has a much larger sale in the U.S., and affords a pleasant change.

Import duty 17/3 per gallon.

Importers.—F. Newbery & Sons, 27 and 28 Charterhouse Square, London, E.C.

Floriline.—This is a popular tooth-paste, usually sold in quadrangular china pots. It is a red, dry, and rather hard mass, made from prepared chalk, 20 grms.; starch powder, 10 grms.; pellitory tincture, 3 grms.; peppermint oil, 10 drops; and water; and is coloured with Florentine lac.

Flour.—Da. Du. *Meel;* F. *Farine;* Ger. *Mehl;* It. *Farina;* Port. *Farinha;* Rus. *Muká;* Sp. *Harina;* Sw. *Mjol;* W. *Blawd, Can, paill.* (See also *Self-raising Flour.*)

Flour is better if kept a short time after being ground before it is made into bread. A fair idea of the quality may be formed by pressing a portion of the flour between the thumb and fore-finger, and at the same time rubbing it gently in the hand for the purpose of making a level surface on the flour. If the latter feel rough, loose, and lively in the hand, and will not form a ball, it is generally of good quality, and shows that not much (if any) of the best parts have been taken out; but if it feel dead, woolly, damp, or clammy when rubbed between the fingers, or if it form into beads or peas when laid on a sheet of paper and shaken about with a circular motion, it is bad, and is probably a damaged or residue flour from which the best has been taken. If, however, a handful be taken up and grasped firmly, good flour will retain its solidity and form on being laid down.

Roller-milled Flour.—Modern mills with steel rollers can now separate the grain into nine varieties of flour and three of bran, the fineness decreasing from Nos. 0 to 9, and it is clear that the finer the flour the less of nitrogen and more of starch. Fine flour is also less digestible than coarse. The roller-milled flour has a richer and better appearance, but the old stone-milled makes sweeter and better bread. (See *Bread.*)

Dry foreign wheat cannot well be ground in the old stone mills, which are the best for grinding our English wheats, and to meet the demands of bakers many millers have replaced their millstones with iron rollers, which will not grind the soft English wheats well; therefore, roller millers are very poor purchasers of home-grown wheat, and thus the price appears to have been reduced.

Flour made in stone mills consists of small pieces of the husk, portions of the germ or vital part of the grain (these discolour the bread in baking), and nearly the whole of the kernel. Flour made in roller mills consists of portions of the kernel alone; the husk, the germ, and most of the outer parts of the kernel being removed in the various processes of roller milling, and these are the most nutritious parts of wheat. Another and more important point, however, with British millers and bakers, is that a 280lb. sack of dry foreign flour will absorb 64 to 72 quarts of water, while English growths, being already full of moisture, will bear no such profitable addition.

Colour is regarded by bakers as the chief criterion of quality, and leads to many disputes. It should be white, with a yellowish, straw-coloured tint. It should not be very white nor with a bluish cast, nor with black specks in it.

The successful baking of a flour does not depend entirely on its quality. The very best flour will, under some conditions, and manipulated by careless breadmakers, produce an inferior loaf.

There are certain conditions which control the quality of the bread; for instance, the temperature at which the

flour is kept. Flour should not be exposed to an extremely low temperature, but should be kept, if possible, in a cool, dry, and airy room, at a temperature of about 70° Fahrenheit.

Flour should not be stored in a room with goods that have a strong flavour or odour, such as coal, oil, tobacco, coffee, fish, or stale vegetables, for it will absorb these odours and retain them when in the form of bread. Through this cause flour is sometimes pronounced unsound.

Age will whiten flour, or, as we say, bleach it out. Some claim that old flour loses its natural flavour and nutritive quality to a certain extent. If this is true, why is it that old wheat flour brings a premium over new wheat flour at harvest time? If the new wheat is sound and well-matured it would certainly have all the flavour and nutriment possible; still, it is not wanted by the large flour buyers. Flour from two months to one year old will not have lost any of its flavour or good bread-making qualities, if properly kept.

Inferior flour has a dull white colour, and a soft, weak-bodied flour has a smooth feel, like soapstone. Strong flour, as a rule, has a granular or sharp feel when rubbed between the thumb and forefinger. Strong flour will absorb more water, make a larger loaf, have a better flavour, and contain more nourishment than a soft, weak flour.

It is well to remember that samples of flour kept long and exposed to the light become bleached and much lighter-coloured than they were at first.

Complaints are often made that flour has gone sour. This has been caused by the dampness of the wheat from which the flour was made, and probably by improper management of the flour immediately after being manufactured. When the flour is "hot off the mill," that is, directly after it has been made, there is perceptible warmth in it, and unless the flour is cooled before being put into a barrel or bin it will not keep sweet and good, but becomes lumpy, which is a sure sign that it has not been properly managed. Flour is all the better for being kept in the sack for the first week, the sack being laid on a dry board floor, and turned underside up every day till it gets cool; it may then be put into a barrel, but requires turning with the scoop at least once a week afterwards.

Flour that has been exposed to the sun will not make good bread. It has been proved by numerous experiments that flour cannot bear the action of the sun, even when not exposed directly to its rays. When flour is exposed to the heat of the sun an alteration takes place in the gluten similar to that produced by the heating of the stones. For this reason it is advisable that the transportation of flour should take place, if possible, on cool days or by night, as well as that flour should be stored in a cool place, says a milling paper.

Baking flour should not be too fine, for being less vaporous it bakes much harder than coarse. Good flour always has a yellowish tinge. A good test for the best flour is to knead singly a given weight of each sample of flour with half its weight of water. The best flour will produce the stiffest dough.

Hungarian Flours.—The term "Hungarian" is extremely vague, as there are as many grades of Hungarian flour as of American, or any other. Speaking generally, therefore, Hungarian is of good colour and flavour and passable strength. The higher grades contain all that can be desired, and are the best flours of the world; the lower and intermediate grades are weaker and likely to produce clammy bread. Gluten is not abundant, but very elastic and good; nice bloom, texture and bread yield good. Usually used for smalls and paste. Suitable for either sponge or dough, but preferably the latter.

Californian Flours are weak, but dry and of good colour. Gluten very deficient, therefore yield poor. Suitable for doughing only.

Spring American Baker's Flour, criticised on the presumption of being an average grade of an average harvest year, must be decidedly termed as

being very strong and harsh. Gluten abundant, but not good, therefore texture in loaf poor. Water-absorbing capacity very high, colour and flavour inferior, dry and chippy to eat, crust foxy, a good sponging flour, and improves on being well wrought.

Winter American Baker's Flour is almost diametrically opposite to the foregoing.—Moist and weak, gluten low, therefore yield poor, flavour better than the spring grade and fairly good, considering the low class of the flour, bulk and bloom poor, a doughing flour. The higher grades are largely used for biscuits and cakes.

1 barrel of American or Canadian flour contains		196 lbs.	net.
1 sack	„	280	„
½ sack or boll	„	140	„
A peck of flour		14 lbs.	7 ozs.
A bushel	„	57 „	12 „

The adulterants of flour are rice flour, Indian corn, potatoes, sulphate of lime, and alum.

It appears that the chief offender in the States is the organisation known as the Glucose Sugar Refining Company or the Glucose Trust. In their circular they inform millers that they can realise from 7½d. to 15d. per barrel more by the aid of maize flour than without it, and the circulars they furnish gratuitously state that it is used very extensively, inasmuch as all flours are judged by their colours. This mixture, which is sold to the miller under the name of *flourine*, is whiter than wheat flour, containing a much larger quantity of starch and relatively less gluten, whereas on the London market the first qualities of flour are somewhat high in colour—almost as high, indeed, as the low grades, but for a very different reason. Low-grade flour owes its colour to the presence of the finer particles of the inner envelope of the grain; high-grade owes its to the gluten, which is relatively smaller in quantity in the whitest flours on the market. The more maize flour is employed the less wheat flour is required, and especially English wheat. When reduced to 10 per cent. the presence of maize is difficult to detect.

A good microscope magnifying 3,000 or 4,000 times is best for detecting adulteration of wheat-flour with maize flour, the starch grains from maize being easily recognised by their angular form, whereas the starch grains from wheat are of oval form.

It will always pay the retailer well to pass his flour once or twice through a fine sieve same day as sent out. This improves the appearance of both flour and bread, and few housewives will take the trouble to sift it for themselves.

The quantity of bread produced from a sack of flour varies, of course, among many other conditions, according to quality; likewise does the weight of a gallon of water vary according to its temperature. The following weights and measures are, however, in accordance with imperial and other generally accepted definitions, but are not presumed to take account of the variations experienced in practice:—

1 sack of flour	=	1 sack of bread.
or 5 bushels „		„ 6 bushels „
„ 20 pecks „		„ 24 pecks „
„ 20 stone „		„ 24 stone „
„ 40 gallons „		„ 48 gallons „
„ 80 quarterns or pottles of flour		„ 96 quarterns or pottles of bread.
„ 160 quarts or half-quarterns of flour		„ 196 quarts or half-quarterns of bread
1 gallon of flour		„ 7 lbs.
1 „ bread		„ 8 lbs.

Wm. Gardner & Sons, engineers, Gloucester, make machines specially suitable for treating above. Catalogues free.

Flourine.—A name in the United States for maize flour.

Flowers, Bouquets, Nosegays.—The trade in flowering plants and cut flowers is now very large in all civilised countries, and especially so in those districts where the climatic or atmospheric surroundings are unfavourable for their production in the open air. Indeed, they have recently come into great demand, not only by the "upper ten," but also the middle and artisan classes. Every year the number of flower lovers is increasing. In great cities like London, Liverpool, Manches-

ter, as well as in the gloomier manufacturing towns and seaports, a considerable business is carried on in flowers for house and table decoration, personal adornment, church ornamentation, memorial wreaths, crosses, etc., and hence a great industry has established itself on which thousands of families depend for the necessaries of life.

The cut-flower business particularly has been very largely developed since the introduction of the "Parcels Post." The Scilly Islands grow and export immense quantities. The Scillonian flowers leave the Isles daily about 9 p.m. during the spring season, and reach Devonport in time for the afternoon express train for London on the following day, and each cargo usually amounts to 1,000 or 2,000 boxes of bloom. Year by year the supply of spring flowers to the Scottish markets increases. The canny Scot naturally prefers those of his own country when they can be had. A dozen years ago the cut-flowers for Scotland went exclusively from the South of England and the Scilly Islands. Now nearly all are grown in Lanarkshire, Renfrewshire, Stirlingshire, and Perthshire.

Immense quantities are imported into England from the more Southern European countries. In France flower culture is one of the most paying forms of agriculture in its widest sense, especially on the Riviera, enormous quantities being grown for export as well as for the perfumery factories at Grasse. In Nice, Sospel, Lucerne, Lantosque, and other districts in the Alpes Maritimes, violets, jonquils, roses, orange blossoms, lavender, jasmine, and several other kinds are dispatched to all parts of Europe. At least 400 tons of cut flowers, valued at over £120,000, are sent away every winter from Nice, Cannes, Beaulieu, and Mentone, besides those kept for the perfumery factories; and these latter use about 100 tons of Parma violets, 15 tons of mignonette, 1,500 tons of orange flowers, 1,500 tons of roses, 250 tons of jasmine, 50 tons of tube roses, 20 tons jonquils, 30 tons of cassia, 500 tons geraniums, and 1,000 tons of peppermint, besides lavender, rosemary, thyme, and wormwood.

The bitter orange tree, *Citrus Bigardia*, receives special attention, and is extensively cultivated for making orange-flower water, while the *Citrus aurantium* is mainly grown for its flowers, which are commonly sold at about 4d. per lb., a considerable quantity of these blossoms coming to England.

In this country the most saleable flowers are carnations, pyrethrums, gladiolas, schizostylis, peonies, crocus, snowdrops, scillas, narcissus, tulips, roses, various lilies, lily of the valley, Solomon's seal, and the best varieties of Michaelmas daisies. Holland sends away annually bulbs and flowers to the value of about £150,000, and it is said one grower near London lays out £20,000 yearly in bulbs for producing flowers for sale.

Closely allied with the foregoing is the business of preparing materials for, and the manufacture of, dried bouquets, wreaths, etc. This includes the bleaching, dyeing, and drying of certain nuts, fruit carpels, ears of corn, palm leaves, fern-fronds, flowers, grasses, reeds, rushes, mosses, etc. Immortelles, or "Everlasting" flowers—a species of *Gnaphalium* and *Elichrysum*—which from their durability are made into garlands, wreaths, crosses, and other devices, to decorate the graves and tombs of deceased relatives and friends in winter.

Hitherto these decorative objects have mostly been made in Germany, but many of our florists and fruiterers have now acquired sufficient knowledge of the art to supply them, and the demand is increasing.

Those mostly interested in such matters should procure an excellent little manual on this subject entitled "*Das Trochnen und Farben Natürlicher Blumen Gräser, etc.*," by H. Hein, recently published by B. F. Voigt, Weimar.

Artificial colouring of real flowers.—There are tricks in all trades, and artificial tints are occasionally given to

freshly-cut flowers by steeping the stems in solutions of aniline and similar dyes which mount the stem by capillary attraction, and are oxidised on contact with the air. The flower preserves its odour, and the colour is inoffensive, but the parts exposed to the air are effectually tinted.

Aniline scarlet dissolved in water to about the transparency of claret has a very rapid action on flowers, colouring them pink and scarlet. Indigo carmine produces beautiful blue tints. The two combined dye various shades of purple, with curious mottled effects, some parts of the flowers becoming pink and other parts blue and purple. Greens are produced by using the blue dye with yellow. Indigo and cochineal are not very satisfactory. Amongst some of the effects produced are the following. Lily of the valley flowers become beautifully tinged with pink or blue in six hours; narcissi are changed from pure white to deep scarlet in twelve hours, and delicate shades of pink are imparted to them in a very short time. Yellow daffodils are beautifully striped with dark scarlet in twelve hours; the edges of the corona also become deeply tinged, and the veining of the perianth becomes very strongly marked. The result is beautifully seen in white tulips, which in a few hours become prettily marked with pink, blue, or whatever the colour of the solution may be. So also with snowdrops, leucojums, white lilac, and many other familiar flowers.

Very singular results are obtained in the variegated leaves of the aucuba and ivy. Single leaves, with their stalks placed in aniline dye-water, began to colour in about three hours, and in twelve hours had their margins deeply coloured. Forced leaves of the Swedish turnip grown in the dark are very susceptible to colour.

Oak leaves, hawked about the streets, often owe their beautiful autumn tints to a liberal use of rose aniline.

To preserve cut flowers a week or two put a little salt-petre or carbonate of soda in the water.

Bouquets garnis (F.) are bunches of sweet herbs. Thyme, parsley, marjoram, chives, and bay-leaf are the most common combinations.

Potting-soil.—A good business is done by plant-sellers in Paris in retailing potting-soil in baskets of about half a bushel.

Fly Papers. — F. *Papier tue-mouches*; G. *Fliegen papier*; Sp. *Papel para matar las moscas.*

Most of the old-fashioned blotting-paper articles contain arsenic, a deadly poison, and, being very dangerous, they can only be sold now by Registered chemists, and every sale must be recorded in the poison register.

(1) In making them, the paper is simply soaked well in a solution of arsenic and salts of tartar. The paper thus absorbs the poison in a moist form and is afterwards carefully dried. They should never be used in shops where foods are exposed.

(2) *Non - poisonous.* — One part of ground pepper and one of brown sugar are mixed with 15 parts of milk, and exposed on plates with or without bibulous paper.

(3) *Sticky Fly - papers.* — Size the paper with a flour paste made thus: Mix thoroughly 1lb. wheat-flour with 1 gallon cold water, bring to a boil; size the sheets of paper well, hang sheet over line, pin at lower corners and let dry; cut the sheets to 18 by 24. Melt together 1lb. white resin and 8 ozs. castor or linseed oil over a slow fire; paint each sheet as thin as possible with a short-bristle brush. In a very warm season use a little more resin; when cooler, more oil.

(4) Prepare a strong decoction, or better still, a tincture, of quassia raspings, and add to it a warm mixture of 300 parts Venice turpentine, 150 parts of poppy seed-oil, and 60 parts of honey. This preparation should be spread thickly on strong paper.

Here are five more mixtures:—

	(1)	(2)	(3)	(4)	(5)
Resin parts	55	50	65	60	50
Linseed Oil	35	30			
Castor Oil			35	30	34
Honey	10	20		10	
Glycerine					16
	100	100	100	100	100

Melt together and paint on paper while warm. The addition of a strong decoction of pepper or quassia chips to the honey kills the flies quicker.

Pieces of twine soaked in any of the above mixtures are often hung up, and, of course, the same string may be used several times.

Other remedies.—Flies object to the odour of the sweet pea, and this plant might, with advantage, be used in keeping shops, etc., comparatively free from insects. Bruised bay leaves are also very effective, so is laurel oil; but the castor-oil plant is perhaps the most powerful insecticide, all kinds of insects seem to detest and avoid it.

Paraffin oil is another simple and handy deterrent. Soak a sponge or piece of rag in the oil and rub the wood work, gas brackets, window frames, lintels, etc.

Foam or Heading for Beers, etc.—There are several of these artificial syrupy preparations and powders made for producing a white creamy foam, froth, or heading on beers, aerated beverages, etc. Each manufacturer has his own fancy name for them, such as *Foam Syrup, Foam Syrup Powder, Foam Sugar Syrup, Foam Sugar, Frothine, French Cream, Heading Liquid, Quilline Froth,* etc., etc. They are mostly made of gum, alum, etc., and are professedly helpful in retaining the carbonic acid gas in the beverages. They are often made from seaweed. Quillaia bark has long been used, but, containing saponin, it is of an irritating character. They should be readily soluble, produce a light and lasting foam, impart no bitter taste to the beverage, should not decompose nor cause fermentation, ropiness, etc.

The froth produced should be creamy white, close and solid, and free from large bubbles. One pound, costing 2/- or 2/6, is said to be enough for 500 gallons of beer or other liquid.

(1) Perhaps the most innocent, pleasant, and effective heading is a mixture of pure ammonio citrate of iron and salt of tartar in equal parts. A few grains are sufficient for a quart.

(2) To make beer retain its froth or head equal parts of alum and sulphate of iron are mixed. Some also add a little salt.

(3) Another preparation is, to each gallon of prepared syrup add from 2 to 4 ozs. of gum arabic dissolved in its own weight in water.

(4) A tincture is also made from 4 ozs. each of crushed Quillaia bark, alcohol, and glycerine, and 8 ozs. of water. This is exhausted to one pint by percolation.

From 2 to 5 drachms of this tincture to every gallon of syrup will be found sufficient to give every glass of soda water a creamy appearance universally liked. At the same time it has the advantage of being cheap, and is used in such minute quantities that it cannot be discovered by taste, also it is always ready for use, and will never spoil.

Fodder Cheese.—A name common in Canada for the inferior cheese made during the long winter months, from hay or stall-fed cows, in contradistinction to the "full grass" cheese, which is produced from the milk of spring and summer, when the animals graze in the rich pastures.

Foies Gras (fwag-rah).—G. *Gänseleber.*

Fatty livers of geese. *Foie Gras au Naturel* (Preserved liver), *Foie Gras Entier* (Whole liver), *Pâté de Fois Gras* (Goose liver pie), *Foie Gras Saucissons Truffés* (Truffled sausages). The whole of the above costly and fashionable French delicacies are composed of the fatty and degenerated livers of geese, cruelly and abnormally fed or crammed for the purpose in dark cellars or similar places.

The chief seat of the business is at Strasburg, now under German rule, but some are also prepared at Toulouse; and many of the cheaper and nastier imitations are made in Paris from horse flesh.

Foie gras is also made at Nerac from the liver of the musk-duck.

Many persons think that foie gras originated with the epicurean Louis XIV., but it dates back to the first French revolution, and was very popular during the Napoleonic wars.

The fattening of geese for these purposes is carried on in Strasburg very

extensively. It is chiefly in the hands of women, and is almost entirely confined to the winter season. Any working man's wife, with a few shillings to invest, can embark in it, and so tempting is the profit that the city of Strasburg may be said to be honeycombed with cellars stuffed in winter with live geese. These fatteners, or "crammers," buy geese from the farmers late in autumn, either lean or half-fattened. Sometimes the geese are fed first, for two or three weeks, with broad beans, and then for eight or ten days with maize; others feed with maize from the beginning. The birds are usually confined in very narrow coops or wooden cages in which they may move backward or forward a few inches, but not turn round. The cage has a narrow opening in front through which the bird can put its head to drink water from a vessel in which a lump of charcoal is placed. The cramming of the poor creatures is performed twice or thrice a day; it is dragged forth by the feeder, who places it firmly between her knees, opens the beak with one hand and crams the maize—previously parboiled in water and seasoned with salt—down the gullet with the other. Experts simply push the food down with the finger, but less skilful hands use a funnel with a smooth stick to expedite the descent. Sometimes balls made of potato flour and barley are used instead of or alternately with the maize. The goose is then thrust back into its living tomb to digest this unnatural gorging, and the process is repeated until the poor bird may be said to sweat fat through all the pores of its body; its cellular tissue, its intestines, its blood, nay even its very evacuations are absolutely loaded with fat; and it is asserted to be a very common practice with Strasburg goose-feeders to submit these droppings to a melting process. (It is somewhat humiliating to admit that this machine cramming system is now being practised on poultry in England, especially by "fatters" in Sussex, Surrey, and Kent.) In the last stage of fattening the crammer has to be very careful in watching the eyes of the bird, and in handling it. "La Revue de Thérapeutique" asserts that some feeders secretly mix powdered salts or sorrel in the food. This causes rapid enlargement of the bird's liver, but sometimes poisons it, and renders the pâté dangerous. Cases of apoplexy are by no means rare, even an unlucky blow or a hard squeeze will often kill it, and this is a rather serious loss, for the liver will be found filled with dark-coloured blood and almost useless. But even these livers are often minced fine, squeezed through a tammy, and mixed with goose fat to serve as a lining for the "terrine." When, however, the proper time for killing the bird has come, it is done with a knife; and the liver, swelled to an enormous size, will weigh one or two and sometimes as much as three pounds. This is very carefully removed, so that no scratch or other blemish may appear upon it, and should be of a light salmon or cream colour. Livers weighing 1½ to 2lbs. each are frequently taken from quite small geese which only weigh 6 or 7lbs. when drawn, and which may have consumed some twenty quarts of maize in the feeding. The livers are next wrapped in a wet muslin or linen cloth and sold to the packer, manufacturer, or pastrycook, who pays for them, according to size and quality, about 3/- per lb. for small livers to 6/- and 7/- per lb. for livers of over 2lbs. each. The manufacturer peels, seasons, and spices the raw liver, after which he places it in the "terrine" (tureen) along with peeled truffles and other ingredients.

The highest priced are "Foie Gras Entier," those consisting of *whole livers* of large size; while the less expensive, "Foie Gras au Naturel," may contain two or three small livers. When the contents of a terrine have been duly baked, a layer of fresh hog's lard is poured over the mass to keep it from contact with the air.

Pâtés de foie gras are only a *mixture*, and usually composed of 10 parts of goose liver, 15 of fresh lean pork, chopped very fine, 10 of fresh lard, 5 of truffles, and 2½ parts of sausage meat, and are often baked in crust to sell at prices from 10/6 to £5 each.

Other delicacies of this nature are *Saucissons* (sausages) *de Foies gras truffés*, *Pain de Foies gras*, and *Timbales de Foies gras*.

Considering that these preparations (many doctors say *diseased livers*) are sent from Strasburg for the delectation of *gourmets* in all parts of the world, it is not surprising that this industry aggregates yearly some hundreds of thousands of pounds. Nearly 200,000lbs. are exported yearly, value about £36,000, an average of say 3/6 per lb.

Leading Merchants.—J. A. Sharwood & Co., Ltd., St. George's House, London, E.C.

Fondants.—A French name (from *fondre*—to melt) for sweets which are made light, and flavoured to represent certain fruits, such as strawberries, raspberries, etc., and so as to melt readily in the mouth. In making these *Cream Fondants*, or *French Fondants*, as they are often called, because they were originally introduced from France, the sugar, with a little glucose added, is boiled to about 220° F., and when nearly cold is worked or "whipped" into a cream with a little colouring matter, blue for increasing the brilliancy of the *white* fondants, or red for producing *pink* fondants. It is then carefully remelted on a slow fire and suitably flavoured, but not boiled or heated too highly, and when of the consistency of rich cream, which was caused by the mass rapidly taking up air during the "whipping," it is run by hand or machinery into moulds made of either dry starch (see *Gelatine Goods*) or patent rubber. In one kind of machine the filling portion is stationary, while the moulds move continuously underneath to be filled. The fondants are finally dried at a moderate temperature.

Crystallised Fondants.—The crystallisation is effected as follows: Ordinary fondants are merely placed on trays and immersed in syrup of right strength and temperature. On cooling beautiful crystals of sugar form on the surface, and they are then finally dried and ready for packing.

Fondants are generally arranged artistically as to colours, and packed in single rows in fancy boxes, with a sheet of white paper between each layer to produce a pretty effect. If allowed to rub against each other the appearance is spoilt.

Fonds d'Artichauts.—See *Jerusalem Artichokes.*

Food and Drug Acts.—See end of book.

Food Preservatives.—These comprise:—Alum, salt, alcohol, spices, hops, borax, boracic acid, salicylic acid, formalin or formaldehyde, calcium bisulphide, sulphite of soda.

Gardner's patent "Rapid" Sifter and Mixer, freely used for above. Prices from 50/- to £100. Catalogues from Wm. Gardner & Sons, engineers, Gloucester. (See also *Preservatives.*)

Food Stuffs.—A collective term, comprising grains, flour, meal, meats, dairy produce, fish, tea, coffee, cocoa, fruits, sugar, spices, and similar commodities.

Foots.—The solid substances precipitated by the caustic alkali or other agent employed in refining oils, etc. The mixture gathers on the bottom, and is generally used for soap making.

The sugar which settles to the bottom of treacle and syrup casks is also called *Foots.*

Forbidden Fruit.—Also known as *Grape Fruit*, *Adam's Apples*, *Pomeloes*, etc.

These legendary names are applied to the fruit of several varieties of the *Citrus paradisi*, a smaller variety of shaddock. They are about the size of large oranges, and the outer surface being considerably indented, probably originated the idea that these must be the kind of fruit which Eve ate of in the Garden of Eden.

Pomelo or *Pummelo* is the Indian name for the fruit, which is distinguished by its esculent and medicinal qualities, and when eaten with sugar makes a fine dessert fruit. It grows in large clusters like the grape, and, owing to its mingled flavour of sugar, acid, and quinine bitterness, it is an excellent tonic, and is often preferred to the orange by those who have once acquired the taste for it. Large quantities are grown in the West Indies, in Ceylon, and in Florida. Hybrids of the orange and pomelo are

sometimes met with in the markets as *Sweet grape-fruit*, but they lack the valuable bitter quality.

Forcemeat, Forcemeat Balls, etc.—F. *Godiveau*; G. *Fleischfüllung*; Sp. *Almondigas*.

Commonly sold in tins with brown sauce.

Forcemeat, or *farced meat*, from the French *farce* (stuffing), is meat chopped fine and highly seasoned; it is either used alone or as stuffing.

Formaldehyde, Formalin, etc.—These liquids are powerful food preservatives, or antiseptics, and have lately come into extensive use. Formaldehyde itself (also known as *Formic aldehyde*) is a gaseous and very volatile liquid, first discovered by Dr. Koch, and is obtained by the slow oxidation of methyl alcohol. It is dangerously poisonous if used too freely, but ranks high as a deodorant as well as a steriliser. The ordinary commercial form is 20 per cent. aqueous solution. Two or three drops in a pint of milk keeps it fresh 3 or 4 days, and double the dose, say 1 part in 10,000, will preserve it for several weeks. Fatal effects have been known to result from swallowing 2 ozs. of a 4 per cent. solution. It has the formula HCHO, and is gaseous at ordinary temperatures. It is of a pale sea-green tint, has a specific gravity of about 1·070, acid reaction, and possesses a pungent and very characteristic odour. One part in 4,000 parts of water is recommended for moistening the paper used to cover jams, rinsing casks, etc., to prevent fermentation of contents when exposed to the air. The vapours gradually diffuse, and the liquid loses strength. The vapour is extremely irritating to eyes, nose, and throat, and care should be taken not to spill any on the hands or skin. No pain may be felt at the moment, but it afterwards becomes rough, white, and insensitive.

Being such a virulent poison, Formaldehyde is not so freely dealt with in commerce, and the solutions are found less dangerous and more convenient. These are commonly sold under various names, such as *Formaline*, *Preservaline*, *Preservative*, *Freezine*, etc. Formalin generally consists of about 40 per cent. of formaldehyde in 60 per cent. of water, but, of course, both it and the other solutions may vary considerably. The strength or percentage of the formaldehyde, therefore, rules the price.

At ordinary temperature, formalin gives off a vapour of formic aldehyde, which is somewhat irritating to the nostrils when inhaled; but all trace is removed by sprinkling a little ammonia.

For preserving vegetable products, a solution containing 1 to 2 per cent. of the formaldehyde suffices.

Fish and small animals can be preserved for an indefinite period in a 40 per cent. solution.

For jams, marmalades, etc., the paper covers merely require dipping in the solution. About 1 oz. in a gallon of brine is an efficient preservative for butter.

A common solution as sold to milkmen, etc., consists of 1 part of formaldehyde in 80 of water, and a quarter of a pint of this added to 18 gallons of milk will keep it fresh for three days at least, also without giving any smell or taste to the milk; but on drinking the milk a peculiar sensation may be noticed at the back of the mouth.

It is also largely employed in preserving clotted cream and many other foods, but many doctors say that such preservatives act disastrously upon the tissues of the stomach. Indeed, they argue that borax, boracic acid, salicylic acid, and other preservatives not only arrest fermentation or waste before the consumption of the food, but afterwards in the stomach, by preventing the proper digestion, and especially where delicate persons and young children are concerned.

After about 24 hours exposure to the vapour of a 40 per cent. solution, gelatine not only becomes insoluble in water, but loses its property of melting when heated. According to M. Gonin, formaldehyde is the ideal remedy for insect bites, applied with a camel-hair brush. The liquid is allowed to evaporate, and a second application is made. It is claimed that the relief from pain is immediate. Where the skin is broken a burning sensation is experienced, which is removed by washing in water. The application has the

effect of hardening and parchmenting the skin.

Formaldehyde mostly comes from Germany, and its price is about equal to that of methylated spirit.

Formosa Tea. — This is a very superior quality of tea, particularly the Oolongs, probably the best in the world, and free from colouring matters. It is grown in the island of Formosa, lately under Chinese rule, but now annexed to Japan, and is cured in small bamboo baskets. The present production is about 20 million pounds a year, and this is likely to be soon doubled. Most of the export goes to the United States, either direct from Formosa or through the ports of Amoy and Hong Kong.

Fothergill's Pills. — (See *Patent Medicines*).—These appear to be composed of aloes, antimony, scammony, and colocynth extract.

Fowl Dressing. — See *Poultry Business.*

Fowl Food.—See *Poultry Foods.*

Fox-berries. — A native berry exported from Canada.

Frankfort Black. — (See also "*Komo*" *Black.*)—Produced in Germany by burning the lees of wines, whence it is imported into this country, both in lumps and in powder. This black is an important ingredient in making the ink used by copperplate printers.

Frankincense.—Da. *Virog Virac;* Du. *Wiesook;* F. *Encens;* G. *Weikraut;* Port. and Sp. *Incenso;* Rus. *Ladon prostoi.* (Also known as *Olibanum, Incense, Thus,* etc. See also *Incense.*)

The name is given to several odoriferous resins which exhale a peculiar aromatic fragrance on burning, such as the resin of firs and spruce, and even the common concrete turpentine, which is scraped off the trunks of pine trees, *Pinus Australis, Pinus Palustris,* and *Pinus Tæda,* Chian turpentine and a juniper resin, obtained from the *Juniferus lycia* (which is imported from India and the Levant in solid brittle little balls). These all furnish the frankincenses of commerce, and are largely used in incense for Roman Catholic and Jewish churches, and also in the composition of plasters, salves, etc.

Frankincense when fresh is a softish yellow, opaque, tough, solid substance, with the same odour as crude American turpentine, but by keeping it becomes dry and brittle, darker in colour, and of a milder odour. (See also "*Olibanum Gum.*")

French Barley.—See *Pearl Barley.*

French Beans.—F. *Haricots Verts;* G. *Schnippelbohnen;* Port. *Freixoes verdes;* Sp. *Aluvias verdes.*

A name given to dwarf varieties of the scarlet runner, or haricots, and identified as *Phaseolus vulgaris,* gathered quite immature, the pod forming the bulk of the food stuff. It would be interesting to know how they got the appellation of "French."

They are native of India, very tender, and will not bear any frost. Usually sown April to June or July in rows twelve inches apart, and six inches from bean to bean, and are ready for pulling July to September; prices, 2/- to 3/- per bushel. Although the last growings usually grow very rapidly and bear well, it is little use sowing late in July, for the cold wet days of August often spoil them. French growths arrive April to June; prices, 6d. to 1/- per lb. For pickling or for winter use they may be preserved whole in brine. The pods should be young, tender, and fleshy, so as to be free from stringiness. They are usually packed in a cask with salt, in layers; each layer of beans should be about three inches deep, and covered by ½ inch of salt. When required for cooking they are soaked in water, and the salt washed out, after which they are cut up and boiled like fresh vegetables, or for the latter purpose they may be done in the same manner that cabbage is preserved in the cold climate of Germany under the name of *Sauerkraut.* The beans should be sliced in precisely the same manner as if they were to be immediately cooked, then placed in a tall earthen jar, alternately with layers of salt. This latter immediately attracts sufficient moisture from the cut beans to form a brine, which preserves the beans perfectly for months.

Great care, however, must be taken to keep the whole of the beans under the surface of the liquid by a weight on the top, for any that project into the air immediately decay. When required for use the necessary quantity is taken out, soaked for a short time in fresh water to extract the salt, then boiled and served in the usual manner. If properly preserved, they are so good that they may be served as fresh beans at Christmas time. Those who are acquainted with the unpleasant odour given out by the sauerkraut tubs in Germany may perhaps anticipate the same annoyance from the beans, but this does not occur, the sulphur element being absent.

In France they are often sliced up raw with other vegetables for use as salads. In cooking ordinary French beans the fresh pods should be dropped into boiling water in which a little salt and a small piece of soda have been dissolved, and then allowed to boil ten to twenty minutes, till they sink to the bottom.

To preserve their colour, they should be boiled without the lid on the saucepan. The choicest kind of French beans are the *Case-knife*, because they have no strings, and are consequently all eatable and easily prepared, needing only to be broken in two, not cut.

To convert French beans into "pickles" it is only necessary to soak in cold water so as to get out the salt. Then fill into bottles or jars and pour over them spiced vinegar, say, 1 gallon vinegar (white or pale is the most suitable), 4 ozs. white pepper-corns, 2 ozs. bruised ginger, 1 oz. chillies or Cayenne pods. Into half the vinegar place the whole of the spices, and allow to macerate 12 hours, then simmer (do not boil) gently for one hour in an enamelled pan with lid on. To be applied hot.

For *French Beans*, apply to Allen Jeeves & Sons, Seddington, Sandy, Beds.

French Blue.—A name acquired by the artificial ultramarine blue discovered and manufactured by Mons. Guimet. (See *Ultramarine.*)

French Bread.—In England this is made from best flour, and for the better kind of rolls and small fancy bread the sponge and dough are commonly wetted with milk and water, and occasionally a little butter is added.

When the rolls or small fancy loaves have lain in a quick oven about a quarter of an hour they are turned on the other side for a quarter of an hour longer. They are next taken out and chipped with a knife, which makes them look spongy and of a fine yellow, whereas rasping takes off this nice colour and renders them look less inviting.

French Butter.—Until the Franco-German war this butter was sent to England salted, but when Paris was besieged and a large quantity of fresh butter was shut out, it found its way to England. It was, however, difficult to sell until a London firm worked it up to secure uniformity of colour, and sold it as "*Brittany Butter.*" It soon became popular, and the manufacture and export of fresh butter direct from Normandy to English retailers soon replaced the salted. The land producing these are rich, old pastures, and the hay is so rich that the cows are wholly fed upon it during winter. No roots are given, so that the butter may not thereby be tainted.

Normandy mostly comes from Rennes, St. Malo, in white baskets of 28, 36, and 56lbs. each, but some of it has been found to contain margarine, and, in fact, its adulteration appears to be still carried on in spite of all the stringent laws made in France to suppress it.

From *Morlaix*, in Finistère, butter arrives in earthen jars containing 10 to 60lbs. each. It is excellent for kitchen and cooking purposes, and will keep six or eight months. This butter is first collected from the country farmers, and reaches Morlaix in large wicker baskets of about 200lbs. each, and all qualities are accepted. It is then emptied into large kneading troughs, where it is graded, washed, worked up to uniform quality, and then forced through a steam kneading mill to extract all excess of milk and water; 5 to 6 per cent. of ground sea salt and colouring (made of *roucou*, olive oil, and saffron) are added, and it is then packed in the jars, covered with white tissue paper, and salt spread over

the paper. The jar is also covered with strong canvas, and hoops of straw put round it to prevent breakage.

Brittany is generally packed in baskets of 28 or 36lbs. each.

The high prices long obtained for fresh butters exported from Isigny and Caen, Normandy, and from Rennes, in Brittany, have so often excited the curiosity and envy of British producers and consumers that the following account of the dairying, blending, and moulding system carried on about Valognes and Carenton, in North-West Normandy, cannot well fail to interest many connected with the provision trade.

It has been kindly communicated by M. C. Gurney, Esq., H.M. Consul at Cherbourg.

The room given up to dairy use on a well-appointed farm is separate from the dwelling room, to the north side of the farm buildings; windows with wire netting are arranged in view of proper ventilation—also the exclusion of cats and other undesirable animals. The door of access is well closed. The cement floor is always in spotless condition. A pair of clean wooden shoes lie close to the entrance for use in the dairy only. No one is admitted but the necessary workers, with hands carefully washed. All the utensils are washed in boiling water and rinsed in cold. The churns are rinsed with boiling water and nettles, then with boiling water alone, and lastly with cold water. A whisk hand-brush is used for the cleaning.

In the poorest farms a large cupboard is set aside for the butter-making; but the cream, in such cases, is more or less affected by the air of the living room.

In the majority of farms, say, where more than four or five cows are kept—the dairy floor is carefully washed and sprinkled with clean water. In some dairies a stream of water may be found running through the middle. The walls are lined with shelves, which are always kept scrupulously clean. No fireplace is ever to be seen in the dairy, but in cold weather the red cinders of the wood fire of the house are brought into the butter-making room in earthen-ware, cup-shaped pans, which have a side handle. These pans are placed on the floor, and are renewed as often as necessary. The temperature is maintained at 16° to 18° C., but pure air ventilation is indispensable.

The milking is done into large, handsome brass jars of a peculiar shape, lined with tin, and having a small neck. From these the milk is strained, and poured into other jars of brown earthenware, and conical in shape, having the large side upwards, one handle, and being fairly deep. These are placed on the shelves in sections. As the milk is brought in two or three times a day, the jars are filled to within an inch of the top. In summer the cream all rises in 12 hours, but in winter it takes 24-36 hours to do so—the longer the time the better the cream and the greater the quantity. Cracks on the cream show the moment for removal. This is done in one operation with a broad concave spatula of boxwood. What cream adheres to the sides of the jars is collected with a small spoon. All the vessels are then emptied, boiled, and rinsed. The skimmed milk is given to the pigs and poultry, having been mixed with bran and barley meal, or buck-wheat meal. Too much of the latter makes the lard melt too easily. Very little cheese is made in this district.

After removing the cream from the milk it is put into brown earthenware pans, shallower and of different shape to the jars for containing the milk. They have circular bottoms and two handles, also an orifice at the base which is uncorked once or twice a day to let the milk run off. These cream pans, and the milk jars, are left uncovered; the former remaining on their shelves until the morning of the day preceding market day, when the butter-making takes place. Usually this is twice a week, though occasionally it is three times, where the dairy is a large one, and situated in the neighbourhood of several market towns—within an easy day's drive.

The barrel-shaped churn in common use, worked by hand or horse power, and made by Simon Frères, of Cherbourg, is one of oak, with iron fittings, and has a very neat and solid appearance. The beater has been improved by practical testing, and gives very satisfactory results. A new pattern has been

brought out, which has a large opening to facilitate the removal of the butter and the cleaning of the inside. The device for closing is very simple and perfect; the central beater is easily taken out and replaced, and the stand is of wood, or wood and iron. A sliding tray receives the butter when the churn is emptied.

The churn having been properly rinsed as described, the cream is emptied into it from the pans to half of its capacity. The custom here is to add about 4 quarts of fresh milk to the cream in the churn. The reason for so doing is that the butter will come faster and preserve better. Some makers pour into the cream this same quantity of water, heated to the temperature of the dairy, 16° to 18° C. Milk, however, is better than the water. After three turns the air tap is uncorked for a few seconds; this is repeated two or three times, and then the churning proceeds with slow and even movement.

When the butter is made, the buttermilk, with the added milk or water, is drained off through the tap. This buttermilk is kept for the family table, and is much appreciated by the young people, as are also pancakes prepared with it.

Fresh water is poured into the churn to wash the butter, which is afterwards turned out into a yellow earthenware basin, broad and shallow in shape. The small portions adhering to the beaters are taken off with a spoon. With the later churns the butter falls on a wooden tray.

The butter is next beaten in the basin with a broad boxwood spatula, having a short handle. It is well washed in these basins, and then made up with this spatula into ½lb., 1lb., and 2lb. balls, placed on plates or cabbage leaves, and early next morning is taken to market.

In some dairies they are now using small hand blenders. But in La Manche the competition is sufficient to make greater care and cleansing necessary. If the butter is sold to the blenders the farmers prefer rather to add to the weight by not cleaning too much.

It is certain, however, that the best made butter fetches the best price; and so easily do farmers win a reputation that they are known to the agent of the blending mill, and their butter is taken at once, even without inquiry.

These agents get to know their business so thoroughly, that their knowledge of butter often enables them to select by smelling, tasting not being necessary.

We now come to the blending mills, and propose to follow the butter in its several processes through the mill.

As we have said, the whole place is kept scrupulously clean. It is lighted by electricity, and heated, when required, by hot water.

The flooring is of cement and tiles. Hot water boilers annexed to the mill do the cleaning and rinsing, and washing of cloths.

Arriving at the factory in cloth-lined hampers, as we have described, the butter is lifted in the cloth from the hamper and turned over on to glass-covered tables and flattened out. Several layers of various colours and qualities are placed over the first layer up to a certain height. The entire mass is then vertically cut into squares of a given size, by drawing upwards pieces of twine, previously placed at stated intervals across the table.

Tressels on tables, with glass tops, and resting on three small wheels with gutta-percha tyres, carry the squares of butter to the *horizontal blender*, a circular, concave, revolving table of wood, mounted on iron. The corrugated wooden roller tapers towards the centre of the table, to which it is attached, and where the buttermilk and water runs off.

A hand blender, for small dairies, to work 4½lbs. of butter, 2 feet 4 inches diameter, costs £2 3s. 6d. A hand or motor-power blender for small mills, working 22lbs. of butter at a time, 3 feet diameter, costs £7 12s.

Powerful blenders that can work 440 lbs. per hour, diameter of table 4 feet 6 inches, cost £40.

The horizontal blenders in use at Bretel Frères, Valognes, where 60 tons of butter are turned out per day, can work over 2 tons per hour, at 3 to 4 horse power; diameter of table 8 feet 8 inches, having two rollers, cost £180.

The butter is turned over automatically after each rolling. These horizontal blenders are sufficient to mix and wash soft and first-class butters. At Valognes

vertical blenders and horizontal laminators (lisseuses) are also in use.

The butter, leaving the horizontal blenders, is carried on the roller tables to the vertical blenders, which consist of a wooden screw revolving within a wooden cylinder. The butter is thrown in at the top, and comes out below at one side on to a wooden tray. From the table of the vertical blender it passes on to the rolling table, and is carried to the laminator or "lisseuse," which is practically a mangle. This machine is composed of two revolving cylinders of wood, between which the butter falls into troughs on wheels with gutta-percha tyres. The laminator is useful in dealing with hard butter, which often contains small nodules of greater density than the rest. These, remaining in the butter through the first two blenders would, by fermenting, cause marbling, and thus depreciate the value. But these rollers remove this defect.

The vertical blender is indispensable for colouring when the butter is too light, owing to drought or frost having spoiled the pasture. Again, this blender is an absolute necessity when margarine is used. It mixes better than the horizontal blender, and *completes* the extraction of buttermilk, but it would not *suffice* for the latter purpose.

Vertical blenders for small mills, working by hand-power 220lbs. of butter per hour, cost £8. Those for working 660lbs. per hour, £17 12s.

The vertical blenders in use at Valognes can work 2½ tons per hour, and cost £60 each.

From the *lisseuse* the butter goes to the moulding machines, which make the cubes of equal weight and size.

The wrapping in paper, bearing the Isigny mark, and packing in wooden boxes, each containing 20 cubes of ½ kilogramme, completes the process of the mill.

The "lisseuse" for small mills, working 220lbs. of butter per hour, costs £17. The Valognes "lisseuse," working nearly 2 tons per hour, costs £140. Several sizes are made between those two sizes mentioned here, in the three kinds of blending machines.

Butter-moulding machines are in use for hand-power—cost, £1 12s. Those worked by motor-power, turning out 300 cubes of ½ kilogramme per hour, cost £7 12s. The tables with glass tops, and having wheels, cost £5 3s. 6d. Hot water boilers, for 150 quarts, £7 3s. 6d. Trucks, with gutta-percha tyre wheels, £2 8s. The Normandy barrel churn, for hand-power, costs from £2 3s. 6d., to make 22lbs. of butter, up to £10 for the one which makes 120lbs. Motor-power churns, working 50 quarts of cream, cost £9, varying accordingly up to £24 for churn complete to work 400 quarts at a time.

If we consider the tables of imports of butter into the United Kingdom, we see that Normandy exports to England reached a maximum of £3,027,645 in 1892; then in 1893 suddenly declined, remained stationary till 1896, and fell again very considerably to £2,330,576 in 1897; while the total imports of butter into the United Kingdom from abroad advanced annually at a steady rate, Danish, Dutch, and colonial butter making great headway. The table of exports from the Cherbourg district shows a falling-off at St. Malo, but on the other hand an appreciable increase in the export of butter *viâ* Cherbourg to Southampton. The increase of export *viâ* Cherbourg is due to the fact that butter from the department of Calvados now reaches England *viâ* Cherbourg, instead of going direct from Caen, for the following simple reason: A few years ago there was some adulteration of butter with margarine in Calvados. One or two prosecutions were instituted and convictions obtained; whereat British importers took alarm, and sought supplies elsewhere. As a result of the prosecutions, the adulteration of Calvados butter, which had to all appearances never assumed great proportions, practically ceased, and has now been made impossible by the stringent provisions of the Act of 1897. But the butter no longer obtained a market in England. The blenders at Carentan and at Valognes, in the department of La Manche, profited thereby; and the Calvados butter, excellent in quality, found its way to

these mills, and thence, after mixing with various grades of Manche butter, inferior Brittany, and sometimes even with cheap imported butters from Italy, in severe winters, reached England in a round-about way. The opinion of a well-known blender is that the output of butter in Western Normandy has attained its maximum point. No antiseptic, not even salt, is added to the butter. Made over-night by the farmers, collected in the morning, despatched at noon to Valognes, worked into shape during the afternoon, kept in cold storage cellars as soon as packed in hampers, or in boxes of twelve 2lb. rolls, despatched by rail to Cherbourg, often the same night, the butter reaches Southampton at seven the following morning, and arrives at the London market in prime condition that afternoon. Thus it is easy to understand that best Normandy selected butter will die hard in our markets.

It has been said that the adulteration of French butter in the past has been the cause of the decline of the export to the United Kingdom by the ports of East Normandy; but this does not appear to be correct. The reason of the decrease in the export by Caen and Honfleur is due to the fact that more goes by Cherbourg, for the rich blenders of the Cherbourg district have driven out nearly all the small exporters of East Normandy, who used to send their goods by Caen and Honfleur. The great exporters of Manche do business on an enormous scale, buying their butters all over France, so that they are able to pay high prices for the splendid butters of Normandy, and are, in fact, obliged to get them at any cost in order to make saleable the inferior qualities bought elsewhere. The small exporter naturally deals only in the local markets, and he is being driven out, the butter which he exported going to swell the exports of the "best Isigny" by Cherbourg. The very best French butter, from the Isigny district, for instance, never comes to England, as the prices here never reach those of Paris. If any decline in the French butter trade with this country has taken place, it is due to the enormous increase in the quantities sent to the London market from other foreign countries and the British colonies. These have reduced prices so greatly that the inducement to French producers to send their butter here is less.

The export trade is mainly in the hands of Bretel Frères, of Valognes, and Messrs. Lepelletier of Carenton.

French Chalk.—See *Soapstone*.

French Coffee.—The chief reasons for the superiority of coffee as made in France are that more real coffee is used. The berries are roasted slowly, but much higher, almost charred, and ground much finer, both operations being done at home, and only as the beverage is required. It has long had a good reputation, which has tempted many English manufacturers to produce disgraceful imitations. The French coffees, as prepared in England, are (many of them) made up of about three parts of ground chicory to one of ground coffee, with a liberal addition of burnt sugar colouring. Of course, the worse the mixture the greater the profit to the packers, if it *can be sold*. The liquid possesses any depth of *colour*, but they have become more notorious than popular, and when liquored they are utterly incomparable with coffee ordinarily served in France. Indeed, many of them are made up of the vilest rubbish, and retailers who have any respect for their customers should be wary in purchasing such mixtures, which are neither "French" nor "Coffee." Some of the coffee made in France even must be very injurious to health. In 1891 a factory there was seized, and it was discovered coffee was being made out of a mixture of 1 part sulphate of iron, 30 parts of chicory, and 70 parts of flour.

In Southern France roasted acorns, of various species of *Quercus*, are used by the peasants instead of coffee.

For the finer qualities of real French coffee try either of the following firms:—Cave, Johnson & Co., White Hart Court, Alderman's Walk, Bishopsgate, London (established 1879)—proprietors of the Celebrated "*Comme-il-Faut*" brand of French Coffee, in ¼lb., ½lb., and 1lb. tins at 10d., 1/-, and 1/4 per lb.

Or the

sold wholesale by John Cassell & Co., 80 Fenchurch Street, London, E.C.

Speaking of the above Café Exquisite de Paris, "The Grocer" says: "It is a high-class Coffee of delicate flavour and aroma. The canister is decorated in excellent taste."

French Mustards. — These semi-liquid condiments are usually prepared from the ground black or brown seed (husks included) by the manufacturers and bottled *ready mixed*—not with water, as in England, but with salt, olive oil, vinegar, verjuice or wine must, in which various flavouring materials have been macerated, such as garlic, tarragon, thyme, parsley, mace, and other spices, and sometimes sugar and ketchup are added. Each manufacturer is supposed to have his own secret recipe.

The flavours are, of course, more like a mixed pickle or sauce than confined to that of mustard, hence they have a stale taste, and always lack the pungency of the English article. Dijon is famous for mustard manufacture, and there is more made there than anywhere else in France.

The peculiar characteristics of Dijon mustards are whiteness of colour, a certain roughness and piquancy not found in any other mustard.

The seed grown in that region is always sown on clear charcoal beds in the neighbouring forests, spaces difficult to utilise in any other way, as the young plants of green peas, potatoes, French beans, and the like would inevitably be devoured by the rabbits, wild boars, and other animals, which will on no account touch the mustard-plant. The soil gives one peculiar flavour to the mustard; another is differently to be accounted for. The mustard when in powder is commonly mixed with verjuice and new wine must, which lend a pleasant acidity. But, in order to obtain the exact degree of acidity, it is necessary that the grape be always in precisely the same state of unripeness, a degree more or less making all the difference.

Bordeaux mustards are mixed with oil and spices, and are favourably known.

Normandy mustard is a fine kind and highly aromatic.

In France the retailers are supplied in casks, kegs, stone jars, or small bottles ready for the table. There is a fair demand in this country for these French mustards wherever foreigners abound, but the average Englishman prefers having his mustard mixed fresh every day.

French Pears.—The pears of France are celebrated for their excellent qualities, and sell well in this country.

Cheapest and most plentiful in August.

French Plums.—See *Prunes* and *Plums*.

French Polish.—This is not quite like ordinary furniture polish. The simplest and perhaps the best consists of, say, 1½lbs. of shellac, 1 oz. of mastic, 2 ozs. of gum benzoin, dissolved in 1 gallon of methylated spirits, or (2) 10 parts of shellac and 40 parts of methylated spirits, and (3) a solution of shellac only makes an excellent polish. The furniture should be polished once daily for about a week with a pad of flannel or cotton wool, taking care to rub the article with sandpaper previous to each of the first four coats of polish, or the latter will not adhere well. Lastly, use a clean rubber with a little strong spirit only to remove cloudiness or any traces of oil. In most of the common kinds naphtha is used instead of spirits.

French Wines.—France was long the vineyard of the earth. Wine was made in about eighty of her departments, and only six (Côtes du Nord, Creuse, Finisterre, La Manche, L'Orne, Seine Inférieure, Pas de Calais) seemed unsuited to vine culture.

Until lately the Church there was the patron of the vine, and produced the best wine-tasters and wine-cultivators. The best growths were on monastic lands, they were cultivated by monks; every abbey had its vineyard, and every *château* (castle) its speciality. The greatest outlets by sea are Bordeaux, Marseilles, Montpellier, Toulon, Cette, and Port Vendres. But by far the greatest export is from Bordeaux, and wines are probably cheaper in that city than in any other in France. In Paris the "*octroi*" or duty charged on entering the city often exceeds the price of the cheaper wine itself.

Champagnes rank first among French wines, and are produced in the departments of the Ardennes, the Marne, the Aube and the Haute Marne; Rheims, Epernay, Vitry, St. Menehould, and Châlons being the principal centres, four-fifths in value being produced in the district of Rheims and Epernay alone. Burgundy ranks next as a wine district. It is about sixty leagues long by thirty wide, and comprises the renowned Côte d'Or, surrounding Dijon, Beaune, Pomard, Chatillon, and Semur, the department of Saone and Loire, also the department of Yonne. Altogether about 220,000 acres are devoted to vine culture in Burgundy. In the South of France, on the Rhone, the wines of Valence, Montélimar, have long been celebrated, also the arrondissements of Die and Nyons. Some of them rank with the best red and white kinds of France; such are Hermitage, Crose or Cotillon, Chanos-Curson, Mercurol, Brézême, Condrieu, Vienne, Côtie Rôtie, Villefranche, Isère, Vaucluse, etc., etc.

The Claret country is marked by the Rivers Dordogne, Garonne, and Gironde in the South-west, and in quantity this wine exceeds all others. It is also the purest that is exported from France, for the vines, being more scientifically reared and elaborately tended than in any other part of the world, there is no need to fortify the product with the spirit known as "*Dutch Courage.*"

In France the vines are grown in rows about a yard apart, and the main trunks are supported by pine or chestnut-wood props.

The "Vendanges," or gathering of grapes in France, is in September or October. Women and children cut them carefully, picking off from each bunch any green or over-ripe fruit. At the end of each row stands a man who receives the grapes into a wooden basket, which is emptied for him at intervals by a boy into a small tub, wherein they are slightly crushed to save space. A cart, carrying two vats, finally collects the whole, and bears it to the pressing-house.

Here the grapes are thrown into the wine press, a simple platform surrounded by a ledge a foot deep, where men with small rakes or with their hands remove the stalks from the fruit, but when the grapes are very sweet this is sometimes omitted, as the stalks by their bitterness will serve as a corrective; the men then, after treading the fruit, cover the pulpy mass with planks, across which a beam slowly descends by means of a vertical screw, pressing the juice through a small hole in the side of the press into tubs placed to receive it.

These tubs as they are filled are emptied into vats, care being taken to fill one vat with the first pressings and another with the second, as it will be readily understood that the liquid that runs first is of more value than that which is extracted by more powerful pressing, indeed, the third or final pressing is kept apart for the labourers on the estate, who afterwards are allowed to mix it with the lees, and to pour water over it continually for their own use until its strength is exhausted.

The vats containing the two good pressings are now allowed to remain quite full a week or a fortnight (and longer in the case of the new hermetically closed vats) during which time fer-

mentation goes on, a bubbling noise testifying to its activity.

As soon as by its taste the wine is found to be sufficiently formed, it is drawn off into new casks each containing 48 gallons, and is removed to the cellars.

In the case of the White Wines, known as Graves or Sauternes, and produced from a white grape which is picked later and allowed to ferment partially on the branch, the vats are not used, and the wines go at once into the casks and into the cellar.

A cellar or *chai* in the Médoc is seldom below ground, save in exceptionally dry localities; in damp neighbourhoods it is several feet above ground.

Here, during the first year, the wines require constant watching and attention. Throughout the first month after their arrival from the pressing-house, the wooden plug, which does duty for a bung, is only lightly placed over the bung-hole, and the cask filled up every two or three days to make good the loss through evaporation. By degrees the care is relaxed, and in March the first racking or drawing into a fresh cask takes place to get rid of the sediment deposited in the old one. Two more rackings are made in the year, and two every successive year—one in spring and one in autumn—until the wine is bottled.

Common or Light Wines are usually bottled eighteen months after the vintage; the higher class growths and heavier vintages are kept three or four years.

Before bottling, the wine has to be "fined," not only to make it bright, but to ensure its permanently remaining so. The white of seven or eight eggs, or a corresponding quantity of gelatine, is thrown into each hogshead, and the wine whipped up till it froths, then left a fortnight or more to "fall bright" for bottling.

Before leaving the subject of Clarets, we will endeavour to give the outline of what is called the classification of growths—it is simply a division by order of merit.

The "first growth" numbers only four members—the Château Lafite, Château Latour, Château Margaux, and Château Haut Brion; which means that the wines grown on the four estates named are on a level with one another, and superior to all others.

The "second growth" is composed of about a dozen names, which are considered to rank together next in order, and so on to the third, fourth, and fifth growths.

After these come the "unclassed wines," which are in their turn divided into "Bourgeois," "Artisans'," "Paysans'," ("Gentry," "Artisans'," and "Peasants'" wines).

It must of course be borne in mind that although this classification is just and correct as an average estimate, there is no year in which it can be said that all the wines produced fall exactly into the position assigned to them; for instance, the "Château Margaux," which is a first growth, will often be surpassed in value by wines classed as fourth or fifth growths, by reason of certain conditions of the weather which have been more favourable to the latter, and likewise years in which fine wines are developed to the highest perfection are often bad for the success of the coarser vintages.

The following table shows the classification of the second, third, fourth, and fifth growths or *crûs*.

SECOND.	
Mouton.	Brane-Cantenac.
Rauzan.	Pichon-Longueville.
Léoville.	
Durfort.	Ducru.
Lascombes.	Cos-d'Estournel.
Gruaud-Larose.	Montrose.
THIRD.	
Kirwan.	Brown Cantenac.
Chateau-d'Issan.	Palmer.
Lagrange.	La Lagune.
Langoa.	Desmirail.
Giscours.	Calon-Ségur.
Malescot St. Exupéry.	Ferrière.
	Becker.
FOURTH.	
Saint-Pierre.	La Tour-Carnet.
Branaire-du-Luc.	Rochet.
Talbot.	Ch.-Beychevelle.
Duhart-Milon.	Le Prieuré.
Pouget.	Mis. de Therme.

FIFTH.

Pontet-Canet.	Le Tertre.
Batailley.	Haut-Bages.
Grand-Puy.	Pédesclaux.
Ducasse-Gd.-Puy.	Belgrave.
Lynch-Bages.	Camensac.
Lynch-Moussas.	Cos-Labory.
Dauzac.	Clerc-Milon.
Mouton-d'Armaillac.	Croizet-Bages.
	Cantemerle.

Altogether, France has long been called one vast vine garden, and wine is the national beverage, but there is most drunk per head of the population in Nice than in any other town in the country. Most of the noted French wines will be found described under their respective names, but the total number is immense. Whether or not she will retain her prestige for wines in quantity or quality is doubtful. The present annual wine yield of France now only averages about 30 million hectolitres, of 22 gallons each.

In 1893	it was	50,070,000 hectos.
In 1894	it was	39,053,000 hectos.
In 1895	it was	26,688,000 hectos.
In 1896	it was	44,656,000 hectos.

And a large portion of above was manufactured from foreign growths. It is said some 50 million gallons are made yearly from dried raisins and currant pulp, also from sugar (Vin de sucre).

The vines are liable to a disease known as the *oïdium*, best combated by blowing sulphur upon the vines with specially-devised bellows before and after the blossoming and especially when great heat follows much rain. Worse than this is the small insect, *Phylloxera vastatrix*, which has worked great havoc in the vineyards. It punctures and wounds the roots and young shoots of the vine that they cannot supply sufficient nourishment to the plant.

France has also been suffering for some years from cold seasons, especially from changes of temperature during the spring, and several of the noted wines and fruits are no longer produced in their wonted quality and profusion.

In the days of Philippe Auguste (13th century) the wines of Etampes and Beauvais were favourite beverages at Court. Henry IV. (a pronounced *bon vivant*) was especially fond of Suresnes wine.

There is now not a vineyard of importance north of Paris, and as for the *petit vin* now made at Suresnes, it has become only the drink of the poorer classes. In the 16th century Macon was celebrated for its muscat wines, but the grape can scarcely be made to grow there now. Ancient chroniclers mention the vines of Northern Brittany, where now even apples are scarce. It is the same with other fruits. Languedoc no longer grows the lemon nor Roussillon the orange; even the poplar tree, so familiar in old French engravings, is nowhere to be found.

The yield of wines in France in 1898 was 710,211,898 gallons, being less than 1897 by 1,503,986 gallons. The Herault product realised about 9d. per gallon; Gironde (Bordeaux), about 1/6 per gallon; Champagne country, about 2/11 per gallon. The wine made from dried raisins, currants, etc., only amounted to 2,835,470 gallons, as compared with 9,931,284 gallons in 1897.

Besides, many of the so-called Light French wines now sold to England from France are really of Roumanian origin. It is much the same with others. Algeria produces some four million, Corsica about a quarter of a million, and Tunis 100,000 hectolitres of wine yearly, and most of these growths go into France for manufacture and export as "French Wines." British merchants are finding these things out and buying direct.

Fresh Fruit.—See *Green Fruit*.

Fresh Herrings are those newly taken from the sea, quickly marketed and consumed. They should never be washed in fresh water. The Manx are considered the most excellent. Herrings are mostly taken in large drift nets, often half a mile long and reaching down some 30 feet into the water. They are generally set in the evening, and the mesh being of a size that the fish, in trying to get through, is caught tightly by the gills, and dies the moment it is lifted out of the water. (See *Herrings*.)

The lowest quality of herrings, namely, those caught after they have spawned, are called *spent fish* or *shotten fish*.

Fresh herrings—those preserved fresh without curing—are also packed in tall tins, which are retailed at about 4d. each.

Friars' Balsam. — A compound tincture of benzoin of the *British Pharmacopœia*, composed of benzoin, storax, balsam of tolu, aloes, and rectified spirit.

Seldom used internally, but as an external application in wounds and ulcers. It is very popular among the working classes, and is also used in making court plaster.

Fricassee or **Fricandeau** (of Mutton, Fowl, Rabbit, etc.).—Port. *Ensopada;* Sp. *Guisado.*

A stew or dish of food made by cutting chickens, rabbits or veal, mutton, etc., into pieces and dressing them in a frying-pan or like utensil, and mixing with lard and other accessories.

The word fricassée is generally applied to chicken, lamb, and other small things, while fricandeau is mostly confined to veal and stewed beef.

Friedrichschall Bitter Water.—A celebrated mineral water coming in bottles from Friedrichschall, near Coburg, Germany, and containing largely soda and magnesia.

This water is much valued by the faculty as an aperient and diuretic. It is taken warm in small doses—seldom so much as half a tumbler.

A little lemon juice or wine will improve its taste.

In bottle unopened it is said to keep a long time without losing its virtues.

Frijoles (pr. freehólies).—A general name in Mexico and Central America for beans, which when cooked with pork and fat, or with dried beef, form the popular food of the people in those countries.

Frogs.—F. *Grenouilles.*

The flesh of the hind thighs of the green frog, *Rana esculenta,* is dried and eaten on the Continent and in America.

Frontignac. —A sweet French wine made at Montpellier, province of Herault, from muscatel raisins grown around Frontignac. There are two kinds, white and red, and they contain about 10 per cent. of absolute alcohol.

Epicures highly esteem this wine with certain kinds of fish.

A British wine, made in England, is also sold under the name of Frontignac.

Froth, Foam, etc. — An artificial heading for beers. (See *Foam.*)

Frozen and Refrigerated Meats. —This business may be said to have commenced in earnest in 1880 with an importation of 400 carcases until last year (1899) we imported, of sheep and lambs only, a total of 6,869,419 carcases from New Zealand, Australia, and Argentina. Large consignments of frozen meats also come from America, usually of excellent quality, though of a dull, blue colour, and much of it is doubtless thawed and trimmed, and sold as *home-grown* meat.

Canada seems to have found it unprofitable to ship live mutton to England; her formerly large exports having dwindled to comparative insignificance. The United States also has failed to see money in the business; but Argentina and the Falklands now send large consignments.

The largest frozen meat factory in the world is at Barracas, suburb of Buenos Ayres, and belongs to the Sansinena family. It is capable of an output of 3,500 sheep per day, or 100,000 mutton carcases per month.

The refrigerating methods adopted for the treatment and preservation of perishable food stuffs have already been noticed. (See p. 83.) They have developed so wonderfully within the last few years as to suggest endless possibilities. What our ancestors deemed impossibilities have become to us matters of everyday simplicity, and articles of food which they regarded as luxuries, only to be had at certain seasons of the year, are now, owing to these refrigerative processes, almost everyday articles of diet. The primary function of all refrigerating machinery is to extract and transfer heat; the primary function of cold storage is to conserve and maintain the duty performed by that machinery. A perfect cold store, therefore, must be such that the units of heat extracted from the goods contained in store by the

machine must be in exact proportion to the heat units lost by such goods stored. If such were possible the cost of maintaining the required temperatures in the stores would be very small. Unfortunately such perfection is impossible, but by proper methods of construction and the application of suitable materials, a somewhat near approach to this goal has been attained. Vegetable silica seems to be the most useful material for the prevention of the transit of heat. Buildings for use by the general public are now substantially erected and proper facilities given for receiving and delivering the goods to be stored. Ordinary building materials are used for the shell and main structure of the buildings, care being taken to insulate the main columns and supports from earth contact, so as to avoid transit of heat into the building, but it has been found best to use a non-absorbent material for the inner lining of cold storage chambers, as well as floors and ceilings. The material that lends itself best to take the place of timber is expanded metal filled in with an inch and a half of cement plaster, on to which opalite is laid in cement. The whole becomes a solid permanent wall impervious to moisture or germs, and capable of being washed out periodically, and provides a sanitary and proper chamber for the preservation of perishable food.

American killed carcases may be known through being bruised about the legs, by which they are hoisted before being killed. The fat also of all frozen meat is generally deficient, and is apt to be more or less coloured with red serum. Through defective arrangements in transit, perfectly sound meat may arrive covered with blue mould; or by careless storing on arrival, the surface may get moist and tainted, while the carcase remains sound. On the other hand, frozen meat which looks very well on the surface may be a little "gone" near the bone in the centre.

Hence no examination is quite satisfactory unless the carcase or piece be cut through.

Most of the larger "Stores" and many individual grocers in the manufacturing districts are taking up the distribution of these meats, especially mutton, lamb, and salmon. The trade is easily conducted, and the profits are good. The expert trade knowledge required is so trifling that any intelligent business man can acquire all that is necessary in a few days, and any able-bodied youth of eighteen years or over can master the technicalities of cutting up the carcases; there is no dirt and little or no waste. The large London providers have already proved their perspicacity by embarking in this trade with marked success, and such firms as the Army and Navy Stores, Civil Service Stores, Harrod's, John Rose & Co., and Whiteley's, etc., are all doing a large and increasing business, especially in New Zealand Canterbury mutton and lambs. Many a grocer with the space to spare might do worse than to give the matter thought and consideration.

Frozen Milk has become an important article of trade in European centres. The milk is frozen in different sized "bricks," and in this way it is claimed its purity and freshness are insured. In Paris it is sold in cans, will keep good quite a month, and is very conveniently carried about.

Fruit. — See also *Canned Fruits*, *Dried Fruits*, *Green Fruits*, *Prunes*, etc.).—The consumption of fruit, both fresh, dried, cooked, and preserved, is increasing rapidly every year, especially in the larger towns and cities. The reader will find nearly every kind referred to under its proper heading. Although far from agreeing with extreme vegetarianism, there is no doubt that the more liberal use of fruit is highly commendable. It is not only agreeable to the taste and beneficial to the system, but the juice which all fruits contain has a direct tendency to dissipate the craving for malt and spirituous liquors. Persons accustomed to beer drinking will generally find a juicy apple to afford more refreshment, and same time to neutralise the desire for alcohol. It seems rather a pity that temperance advocates do not make more use of this fact in their controversies.

Apples supply the higher nerve and muscle food, but do not give stamina.

Prunes afford the highest nerve or brain food, supply heat and waste, but are not muscle feeding; they should be avoided by those who suffer from the liver. Oranges are refreshing and feeding, but are not good if the liver is out of order. Green figs are excellent food. Dried figs contain nerve and muscle food, heat and waste, but are bad for the liver. The great majority of small, fresh, seed fruits are laxative. All stone fruits are considered to be injurious to those who suffer from the liver, and should be used cautiously. Lemons and tomatoes should not be used daily in cold weather; they have a thinning and cooling effect. Raisins are stimulating in proportion to their quality.

Fruit Crystals for *Summer Drinks*.—There are now several makes of these popular powders or "crystals." They were first invented and introduced by De Carle & Son, Norwich, and that firm seems still to possess the secret of making the finest quality. They send out enormous quantities, and probably obtain the highest prices.

As a general basis cheap makes consist of about 29 parts of sugar in small crystals and 1 part of tartaric acid in the same form. A portion of the sugar is first rubbed down with sufficient concentrated essence of the desired flavour, and the whole suitably coloured.

Thus, to make Lemon Crystals, take 29 ozs. sugar, 1 oz. citric acid, essential oil of lemon 30 minims, and, if desired, a little saffron to tint.

Pine-apple, raspberry, strawberry, and other sorts may be prepared in a similar way, care being taken to use a proper quantity of essence to give the desired flavour.

Gardner's patent "Rapid" sifter and mixer, freely used for above. Prices from 50/- to £100. Catalogues from Wm. Gardner & Sons, engineers, Gloucester.

Fruit Essences.—These are liquids which possess the agreeable refreshing taste and flavour of fresh fruits.

The process of their manufacture is very difficult and rarely successful, except in a few chemical laboratories, where they form a speciality and where they may generally be had of excellent quality and at very low prices.

Some kinds are also prepared artificially from chemicals. Those *guaranteed* pure and highly concentrated are the best.

The Germans now send to this country very large quantities of natural and artificial fruit juices in highly-condensed forms. Raspberry and other juices are admitted duty free into England when the spirit they contain is trifling or natural. Several of the manufacturers of grocers' sundries import these juices, and some also use the artificial fruit essences from the German chemical works.

Used in confectionery in the manufacturing of liqueurs, cordials, and summer drinks, also in perfumery.

Fruit Ices.—See *Ice Creams*.

Fruit Jellies.—(See page 52, also *Table Jellies*.)—These are sometimes prepared wholly from fruit and sugar. The fruit juices are generally mixed with about one-half their weight of refined cane-sugar, and boiled until the liquid jellifies, which is tested by dropping about half a teaspoonful on a clean cold plate, and noticing whether it sets stiff or runs off in liquid form. If the former it is sufficiently boiled, and is emptied out of the pan. When about half cold it may be filled into small earthenware or glass jars, and covered over like jam. In boiling it should be skimmed two or three times, and it is best not to add the sugar until the boiling has commenced. But very pretty and economical jellies are now made from the fruit juice and gelatine, with glucose instead of sugar. In no department of preserving is there more uncertainty than in jelly manufacture, so much depends on the quality of the fruit. This is more pronounced in the case of small fruits than with the larger kinds. When currants are over-ripe, or have been picked after a rain, the result of using them will be doubtful. Pectine, which forms the basis of vegetable jellies, is a substance which, in its composition, resembles starch or gum. It

gives to the juices of the fruits the property of gelatinising. This property is at its best when the fruit is just ripe—better a little under than over ripe. When boiled too long it loses its gelatinous property, and becomes of a gummy nature. No jellies should be boiled over 20 minutes.

Apply to De Carle & Son, Fruit Drink Works, Norwich.

Fruit Juices.—(See also *Cordials.*)—This liquid form of preserves is most useful, convenient, and wholesome. The juices of the strawberry, raspberry, peach, apricot, grape, etc., are only boiled for about 10 minutes, and sealed while boiling hot. They may be thus canned with or without sugar, and are very handy for creams, ices, drinks, etc.

The following methods are also commonly adopted:—

Strawberry Juice—(1.) Cover strawberries in a wide glass with fine sugar, draw off the fluid and strain. Then boil the juice with the addition of 1 gm. salicylic acid, dissolved in cognac, for each kilo. Mix the syrup with a little rum, or arrack, and store in small bottles.

Natural Strawberry Essence. — Ripe fresh berries are pulped, macerated with the equal weight of alcohol for fourteen days, pressed slightly and filtered.

Artificial Strawberry Essence. — Natural strawberry 2·5 kilos, amylacetate 500 gm., raspberry wine 1 kilo, cherry laurel oil 2 drops, rose oil 1 drop, sugar 40 kilos, water 60 litres, alcohol 25 litres, and a little vegetable colouring matter.

Essence of Lemon.—(1.) Macerate the fresh peel of forty lemons and thirty oranges with alcohol 8 litres and water 2 litres, for two or three days; then distill off 8 litres. Dissolve in every 100 gm. of this distillate citric acid 75 gm., and add water 200 gm.; colour with a trace of orange, and filter after shaking with talcam; mix 100 gm. of the filtrate with simple syrup, 2 kilos. (2.) Lemon oil 11·25, rose oil 0·03, are dissolved in alcohol 80 per cent. 200·00, tincture of orange peel 9, tincture of lemon 9, prepared from fresh peel, and tincture of vanilla 1·5 are added. Of this essence 3 parts are sufficient to flavour 1,000 of simple syrup. *Lemon juice* is best prepared from freshly pressed and filtered juice; 10 parts are boiled in a porcelain dish with sugar 18 parts, or citric acid, 1 to 2 parts, may be mixed in an equal volume of water, mixed with simple syrup, 100 parts, and flavoured with 1 or 2 parts of a tincture prepared from fresh lemon peel and alcohol.

Artificial Lime Juice.—Citric acid 4, tartaric acid 4, are dissolved in alcohol 12 and water 25, lemon essence 40, simple syrup 1·000 are added.

We believe that Messrs De Carle & Son, Norwich, were the first to make the fresh juices popular.

Lemon Juice for Drinks.—Sugar 100, distilled water 50, citric acid 7·5, tincture from fresh lemon peel 5 to 8, and orange-flower water 15 to 20.

Raspberry Essence. — Raspberry syrup may be used with the addition of citric acid dissolved in water and red colour. (2.) Raspberry juice 1·000, white sugar 1·600, acid tartaric 35 to 40, alcohol 30, and a little red colour. This syrup is prepared in the cold, the acid being dissolved in a little warm water.

Special Manufacturers.—De Carle & Son, Norwich, original makers and inventors, to whom apply for prices and particulars.

Fruit Salts.—Different makers may vary a little in their proportions of the ingredients, but the following are good average recipes:—(1.) 2lbs. icing sugar and ½lb. of each of the following: Epsom salts, carb. soda, cream of tartar, tartaric acid, and citrate of magnesia all well mixed together. One compound is absurdly advertised as preventing any over-acid state of the blood, but, as most people know, the blood is always alkaline and cannot become over-acid. (2.) Bi-carbonate of soda 23·49 per cent., tartaric acid 20·37 per cent., sulphate of magnesia (Anhyd) 7·44 per cent., cane sugar 42·11 per cent., moisture 6·59 per cent. equals 100.

The above-named quantity of sulphate of magnesia is equivalent to 15·2 per

ent. of Epsom salts. The mineral ingredients are usually mixed together, artially dried, and afterwards blended ith the cane sugar. This is a fair ample of saline of a similar composion to many in the market.

Fruit Syrups.—(See also *Syrup.*)—'hese are obtained and preserved ither by the cold process or by heat. 'he fullest flavour of the fruit is btained by the former. The fruit must e freshly gathered and the sugar of est quality. Then the syrup may be repared either by simply combining ie juice expressed from the fruit with ugar or the uninjured berries may be ixed with the sugar, when the latter ill extract the juice, leaving the berries rivelled and tasteless.

When prepared by steam or hot water ie syrup is scalded. The water should e distilled, and the operations should e performed with the greatest possible elerity.

They should be bottled quite hot, uickly corked, and tied over with ladder or other air-tight material. mall bottles are better than large ones iat have to be opened and re-closed so ften.

Candying or crystallisation is preented by adding a little glucose or cetic and citric acid, and fermentation y a little sulphate of potassa or of me.

Gardner's patent "Rapid" sifter and ixer freely used for above. Prices rom 50/- to £100. Catalogues from Vm. Gardner & Sons, engineers, loucester.

Fucus, or **Rock-weed** (also known s *Varec* or *Vraic*).—These are a variety f sea-weed found on rocky shores beween the tide marks. Some of them ield soda, iodine, glue, etc., and in easons of scarcity this species of vegeation is often eaten raw, both by nimals and human beings. In the 'hannel Islands large quantities are sed as manure.

Fuel. — Various kinds are described nder—

Anthracite,	Gas,
Asbestos,	Lignite (Bovey),
Block coal, or	Liquid fuel,
Briquettes,	Paris coal,
Coal,	Peat moss,
Coke,	Petroleum,
Firelighters,	Press coal.

Fullers' Earth or **Woburn Earth.**—Du. *Voläarde;* F. *Terre à Foulon;* Ger. *Wakererde;* It. *Terra da Purgatori;* Lat. *Creta fullonica;* Rus. *Schiffernaia;* Sp. *Tierra de Batan.*

A porous clay, or alluminic silicate, found in various geological positions, and in different parts of the country. Long ago it was plentifully obtained at Woburn, in Bedfordshire, and then got the name of *Woburn earth.*

It is also abundant in Bucks, Hants, Beds, and Gloucestershire.

The best is got near Reigate, Surrey, where there is a bed 10 feet thick.

It is soft and greasy to the touch, and consists of about 53 per cent. of silica, 10 per cent. of alumina, and 9 per cent. of peroxide of iron, etc. It is usually of a greenish grey colour, but sometimes bluish spotted, and separates into powder if soaked in water, making a slight hissing noise; also melts readily on the tongue, like butter.

Like other soft marls, it absorbs grease, and is principally used by fullers in taking grease out of cloth before applying the soap.

The value of the prepared article depends on the alumina present, which should be at least one-fifth of the whole, but not more than one-fourth, lest it become too tenacious.

It is sold both in lump and in powder, at from 37/- to 75/- per ton.

The best varieties, such as are suitable for toilet purposes, are of a clean drab or fawn colour; the so-called White or Precipitated Fullers' Earths which are sometimes offered are not Fullers' Earth at all; they are generally China Clay or Terra Alba, which differs from the genuine earth in both its physical characteristics and chemical constitution. The substitution is altogether unjustifiable, as China Clay lacks those peculiar healing and protec-

tive properties which make Fullers' Earth such an excellent dusting powder.

Matthews' Fullers' Earth was the first preparation brought out for toilet purposes.

An excellent quality is now prepared at Frongoch by Mr. R. J. Ll. Price, of Rhiwlas, Bala, North Wales.

Fulling Soap.—A soft soap used in cleansing and scouring woollen fabrics. It is composed of 125 parts of potash oil-soap, 54 of clay, and about 110 of calcined soda-ash. It should be free from resin, soda, and silicates, as these injure wools.

Furmenty or **Frumity.**—Prepared by steeping new wheat in water, and placing the pan in an oven, where it is seethed at a temperature of 100° to 120° F. for 18 to 36 hours, when the grain will have ruptured its skin, and at the same time the kernel will be softened and the saccharine process will have commenced. It is then braised or shaken in a bag till the outer skin is peeled off, and when winnowed or washed the wheat is ready to be boiled with milk. It is afterwards spiced and sweetened with sugar, and ready for serving hot. Furmenty is a very ancient food, and was widely popular in the middle ages. In some districts it is eaten to celebrate the harvest home and in other districts Christmas Eve, but it is only now prepared in country places and is very indigestible.

Furniture Oils.—These mixtures are prepared in various ways:—

1. Two dr. acetic acid, ½ dr. oil of lavender, 1 dr. rectified spirit, and 4 ozs. linseed oil.

2. One pint linseed oil and 2 ozs. alkanet root; heat, strain, and then add 1 oz. lac varnish.

3. One pint linseed oil, 2 ozs. rectified spirit, and 4 ozs. butter of antimony.

Furniture Cream.
Furniture Paste.
Furniture Polish.
Furniture Wax.
—These are names given to numerous preparations intended to re-polish or give a gloss to furniture that has been previously French-polished, but which has become faded or scratched.

The following are a few popular recipes:—

1. Take 5 ozs. beeswax, 3 ozs. white wax, ¾ oz. powdered white Castile soap, 1½ pints good turpentine, and 1½ pints boiling water. First melt the waxes together in a dish or pan near the fire, and while hot add one-third of the turpentine. Stir the soap into the boiling water, and when dissolved add to it the remainder of the turpentine. Finally mix all together, stir well, and then leave till cold. It may then again be well stirred, and filled into pots ready for use.

2. 1lb. beeswax, 4 ozs. soap, 2 ozs. pearlash, and 1 gallon of water; boil together, and stir until well mixed.

3. Beeswax, spirits of turpentine, and linseed oil, equal weights of each; melt and cool.

4. 1lb. beeswax, 5 ozs. linseed oil, and ½ oz. alkanet root to colour; melt, stir, and cool.

5. 4 oxs. beeswax, 10 ozs. turpentine, and a little alkanet root; melt, strain, and cool.

6. 4 ozs. beeswax, 1 oz. resin, 2 ozs. oil of turpentine, and a little Venetian red to colour; melt, stir well, and cool.

A Japanese furniture polish which is highly appreciated is made with 1 pint of linseed oil, 1 pint of strong tea, the whites of two eggs, and 2 ozs. of spirits of salts. These are well shaken each time the preparation is used. A few drops are applied with a soft linen pad, afterwards well polished off with an old silk handkerchief or a chamois leather.

Special Firms.—Day & Martin, Ltd., London and Liverpool (see advt. near end of book); E. Mitchell & Sons, 5 Burnet Place, Bradford, Yorks; J. Parkes & Co., Priory Works, Warwick; Punch Polish Co., Hick Street, Birmingham (F. Cooke, proprietor).

Fusees, or **Vesuvians.**—F. *Allumettes-tisons.*

Names given to a kind of matches or cigar lights, for lighting pipes, cigars, etc. The heads are made up mostly with, say, 18 parts saltpetre, 19 char-

coal, 7 powdered glass, and 5 or 6 parts of gum, a little scent, say of satinwood, lignum-vitæ dust, cascarilla bark, or gum benzoin, is added to emit a fragrant odour. The igniting substance is same as for safety matches. They are intended to ignite by friction, and not blow out by the wind in the open air.

Fusel Oil, or **Grain Oil** (also known as Potato Oil, Potato Spirit, Crude alcohol, Amylic alcohol, etc.).—A colourless limpid spirit of cheap, inferior quality, made out of various alcoholic substances, such as fermented potatoes, or the dregs and refuse from distillation. It has a higher boiling point and is less volatile than ordinary alcohol, hence it chiefly accumulates in the latter portion of distilled liquors. If the portion which distils between 260° and 280° F. is collected apart and redistilled the oil obtained has a fixed boiling point of about 268° F. It possesses a peculiarly irritating and burning taste, and a strong nauseous and oppressive odour, and in quantity is exceedingly injurious.

This deleterious component of alcohol is often used in the manufacture of cheap whisky and other spirits, also in certain fruit essences, such as jargonelle, pear essence, and others.

If whisky on being mixed with four times its bulk of water turns a whitish colour it is probably owing to the presence of this unwholesome fluid.

It is, however, the opinion of Dr. Lander Brunton, physician to St. Bartholomew's Hospital, that there are worse impurities in some spirits than fusel oil. In his lectures, 1897, he says that although fusel oil is an impurity, and seems to have an injurious effect in rendering the mixture of ethyl and amyl alcohol more active, causing headache, but the substances that probably have the greatest effect in exciting the maniacal fury in the drinker are the so-called *furfurane* series. Furfurane, he says, seems to have the power of acting as an anæsthetic to a greater extent than alcohol has. It lessens the irritability of the sensory part of the human system to such an extent that it abolishes voluntary movement. It has several compounds. Furfurane alcohol is highly stimulating and delightful for a time, but reaction and headache follow. The compound furfur-aldehyde, or furfur-ol, has an entirely different action, and this is the substance which arouses evil tempers and sullen mania and provokes crime.

Mr. Bannister, of Somerset House, has also testified that the fusel oil in spirits is much exaggerated. He says there is probably more of it in half a pound of pear drops than in a bottle of Scotch whisky.

G

Galangal, or **Galingale Root.**—Chin. *Liang-kiang;* Da. *Galange;* Du. *Galgel;* F., It., Sp. *Galanga;* Ger. *Galgant;* Port. *Galgangal;* Rus. *Kalgand;* Sw. *Galgant.*

The aromatic and tuberous roots of the *Maranta galanga,* or *Alpinia officinarum,* of the nature of ginger and pepper, and much used in Russia, China, Sumatra, Java, and other Eastern countries for the same purposes as ginger.

There are two sorts imported into this country, known as the greater and the lesser. They are both used as a spice. The greater is the root of the *Kempferia galanga,* a knotty root from the Dutch Indies, with several arches on the surface, of a reddish brown colour on the outside and a yellowish white within, which is very like ginger in smell, taste, and composition. The lesser galangal, from China, which is the most esteemed, is a knotty jointy root, about an inch long and about half an inch thick, with a brownish red coat and a pale red colour within. It has several circular marks, or rings, on the outside, has a hot bitterish aromatic, biting taste, like pepper, and a fragrant smell.

Galantine. — G. *Kalte gefüllte Fleischrolle.*

A French title for a dish of veal, chicken or other white meat, which has been boned, stuffed, tied tightly, and boiled with spices and vegetables. It is garnished with aspic jelly, and intended to be served cold.

Some people often confuse galantines with brawns; but, although first cousins, it should be remembered that brawns are stewed in their own gravies and liqueurs, and consist of meats and jellies mixed together, while galantines are merely fish, flesh, fowl, or vegetables pressed and *cased* in jelly.

Gallipoli Oil. — (See also *Olive Oil.*)—Olive oil shipped from a seaport town of that name in Naples. The olives are merely thrown into heaps as soon as gathered, and allowed to ferment before the oil is extracted. It is largely used in woollen manufacturing and in turkey-red dyeing.

Gallipoli is the principal port of the Mediterranean for the shipment of olive oil, being situated in that part of the country where the oil is produced in the greatest abundance. The export is from two to three thousand tons a year, and the town itself is undermined with large cisterns about 30 feet square, cut in the limestone rock, which is peculiarly well suited for storing and preserving the oil.

The bulk of it reaches Gallipoli in sheep or goat skins from Bari, Puglia, and Calabria, carried on mules, and most of it comes to England.

Galls (also known as *Nut Galls, Gall Nuts, Oak Apples,* etc.).—F. *Noix de Galle;* It. *Galles;* Per. *Mazu;* Port. *Agalhas;* Rus. *Orêkhi;* Sp. *Agallas;* Sw. *Galläple;* W. *Afalau'r derw;* G. *Gallapfel, Gallus.*

These are small hard berry or nut-like excrescences, lumps, or tumours, which grow on oak trees of different kinds in various parts of the world, particularly in the Levantine oak.

They are not a fruit, but are produced by a fly, a species of *Cynips,* or gall-wasp, which first appeared in this country about 1855, which pierces the soft twig and lays its eggs in the puncture; this causes a swelling of the bark, which grows into a perfectly round shape, and varying from the size of a pea to that of a walnut. When the larvæ are grown into gnats they eat their way out, leaving a small round hole.

Oak-galls are often improperly called "Oak apples," but the true oak apples are the spongy balls produced by *Teras terminali,* and sacred to the memory of King Charles.

Cranberry Galls are produced on the cranberry stem by a minute fungus.

Apples of Sodom (so called), which are occasionally brought as curiosities from the shores of the Dead Sea, are only large galls, full of dust and larvæ or the grubs of insects.

The best two sorts of galls known in commerce are Oriental and European. The former, also known as *Turkey galls* (*Quercus infectoria*), come from Aleppo. They are the size of a small round nutmeg, and have usually a considerable number of tubercles rising on their surface, broad at the base and terminating at a point. They are of a very solid and firm texture, hard to break, and very heavy.

Chinese or *Japanese galls* are produced by *Aphis chinensis* on *Rhus succedanea,* and are known as "Wu-pu-tze galls." They yield about 70 per cent. of tannin.

The European galls, as those of France and Italy, are rounder than those of Aleppo, of the same size, but have perfectly smooth surfaces, without any protuberances; they are very light, easily broken, and often spongy and cavernous within. They are also of a much less austere taste, and of much less value both in manufactures and medicine. The best gall nuts are green or blue, and contain 60 to 70 per cent. of tannic acid—indeed, no other natural product is so rich in tannin.

In the London market, galls are classed as blue, green, and white; the latter (being those from which the insects have emerged) are not much esteemed. They are sometimes dyed

blue, but the fraud may be easily detected by the hole left behind by the insect.

Gambier, or **Gambir,** often erroneously called "*Terra Japonica,*" is an extract or dye-stuff, like *Cutch,* and made by boiling the leaves of *Uncaria gambir,* a climbing rubiaceous shrub.

First introduced in 1807, it has become indispensable in the tanning and silk trades, and is also used in India and the Dutch settlements for chewing, as well as an astringent in medicine.

Great attention is paid to its cultivation in Singapore, Sumatra, Java, India, and other tropical countries, about £1,000,000 worth being exported annually from Singapore alone. It ranks second in importance of the products of the Malay Peninsula.

The short leafy twigs are picked by hand two or three times a year, and thrown into vats of boiling water, where they are stirred about and bruised with wooden forks for about six hours. The flaccid masses having been taken out and drained into the vat, the boiling lye—of a yellowish olive-green colour, like thin pea-soup—is then poured into shallow wooden tubs to cool. To solidify it is next stirred by thrusting a short thick cylinder of very soft mahang wood into the tub, and rubbing the fingers up and down on the surface of the cylinder. The fluid gradually thickens in about fifteen minutes, contracts, turns a paler colour, and looks like soapy cheese. When cold it is turned out as from a mould, and cut into small cubes. Four kinds of gambir are made by the Malays. *Gambir bulac* (round gambir) is the most expensive of the chewing gambirs, and consists of thin circular biscuits about 1½ inches across and a line thick. The Siak gambir of this form often contains rice dust and cloves as impurities. *Gambir papan* (board gambir) is in thin squares about 1½ inches square and one line thick. This is light brown, and crumbly in texture. *Gambir paku* (nail or finger gambir) is in sticks about 3 inches long, and very dark in colour. *Gambir dudur* (dice or cube gambir) is made in small cubes an inch each way. Other forms are manufactured for special markets, but the fancy of the natives is for the above.

Gamboge. — Da., Ger., and Rus. *Gummigutt;* Du. *Guttegom;* F. *Gommegutte;* It. *Gommagutta;* Port. *Gutta gamba;* Sp. *Gutagamba;* Sw. *Gummigutta.*

A concreted vegetable juice, or gum-resin, and is called gamboge because it originally came from Camboja, in Siam, formerly the capital of the kingdom of Cambodia. The best pipe Gamboge, from Siam, is obtained from the tree *Garcinia Hanburii,* and consists of a resin, with 15 to 20 per cent. of gum. It is brought to this country chiefly from Ceylon, in the form of obicular masses, or of cylindrical rolls of various sizes, is of a dense, compact, and firm texture, and a beautiful yellow colour.

Ceylon gamboge is obtained from *G. morella,* and that of Southern India from other species.

The finest sort is of a very deep yellow or bronze colour, breaks shiny, and is free from dross; it has no smell, and very little taste unless kept in the mouth for some time, when it impresses a slight sense of acrimony.

Gamboge is used chiefly as a pigment in water colours; but, being a powerful purgative, it is also used in making certain kinds of pills. About 88 per cent. is soluble in alcohol, and it was formerly employed in colouring confectionery, lozenges, etc., when a primrose, straw, or light yellow tint was required, but is now considered an adulterant.

Gammon.—The hindermost quarter of a side of bacon. (See *Provisions.*)

Ganja. — (See also *Bhang.*)—Ganja or Gunjah is a narcotic stimulant prepared in India from the hemp leaf. This Indian hemp-plant grows readily without cultivation in almost any part of that empire, and the smoking of ganja to excess is considered much more harmful than opium. It is, in fact, the most noxious of all intoxicants now commonly used in India. But as that

country abounds with other wild plants capable of yielding products still more deleterious in their effects than either ganja or opium, the result of prohibiting, even if it were possible, the growth and use of these latter drugs to satisfy the cravings of the poorer classes for stimulants would probably induce the use of those which are still more baneful in their effects.

Garbanzos. — The Spanish name for the chick pea, which is the grain or vetch of the *Cicer aretinum*, and largely used as an ingredient in the famous *Olla podrida*.

GARLIC.

Garble. — The dust, dross, refuse, or faulty pieces of spices, drugs, etc. *Garbling* is the picking out the worst of any commodity.

Garbled is a term applied to drugs, dyestuffs, spices, etc., when they are much broken or otherwise reduced to small imperfect pieces.

Garlic or **Churls Treacle.** —Da. *Hoidlog;* Du. *Knoflook;* F. *Ail;* Ger. *Knoblauch;* It. *Aglio;* Per. *Seer;* Port. *Alho;* Rus. *Tshesnok;* Sp. *Ajo;* Sw. *Lök;* W. *Garlleg.*

A bulbous herb, *Allium sativum*, closely allied to the onion, leek, and shalot. In fact, it has all the properties of the onion in a more intense form. This name was derived from the Anglo-Saxon *gar*, a lance (referring to the spear-shaped leaves), and *leác*, a pot herb, and hence the word *leek*. It loves mountainous countries, and is so profuse in Switzerland that even the ale tastes of it, and it infects the corn with its aroma. It also abounds in Sicily, where it grows naturally. The first year after sowing the seed only produces a single bulb or clove, but when this is replanted, the following spring, several cloves are produced from the same bulb. Each bulb is composed of six or twelve smaller ones, called *cloves* of garlic, and which are enclosed in one common envelope.

Garlic has a very acrimonious taste, strong flavour, and rank odour, which is disliked by many, but it has long been highly esteemed as a seasoning in cookery, especially in Europe; perhaps, most in Spain and least in England. It is highly relished by the Russians, Poles, and Spaniards, and especially by the Jews. It is also very popular with the French in Provence, Languedoc, and Gascony, where the country people season nearly all their food with it. In Provence the cloves are pounded and mixed with olive oil, forming the celebrated *Ailloli*. The

Roman soldiers used to be fed with garlic to excite them in battle, so were also the birds in cock-fighting days.

The Egyptians of old adored the plant, but the Greeks abhorred it.

Garlic is said to be very stimulating, creates a good appetite, helps digestion, increases the secretive and absorbent organs. It is also a good vermifuge, cures or prevents marsh-fevers, and has other medicinal properties.

It was formerly a popular specific in England for leprosy, when that disease prevailed here, and also formed one of the principal ingredients in the "Four Thieves Vinegar," said to have been so successfully employed at Marseilles for protection from the plague which once raged there. In times of cholera a few cloves of garlic, crushed and placed upon saucers here and there in dark corners where there may be impure air, have long been considered invaluable. While some mariners would almost as lief go to sea without a compass as without a plentiful supply of garlic in the "stores."

It can be advantageously used in all kinds of broths or soups, with fish, fried or boiled, with roast or grilled meat, in the same way as an onion, and for hashes and stews nothing is more flavouring.

It is still used in some countries for rubbing on the skin in cases of fever and nervous diseases of children. Garlic is most plentiful and cheapest about October, Dutch garlic then averaging about 10/- per cwt. bag.

Garlic Oil.—This product is more popular on the Continent and in America than in this country. It is largely distilled at Leipzig, and the whole town is often redolent of the odour. It is coming into use in the manufacture of pickles, piquant sauces, and other condiments, and saves a great deal of time and trouble as well as effecting economy in price.

About 30 grains of this essential oil is equivalent to some 7lbs. of fresh garlic.

Garlic Vinegar may easily be made by cleaning, peeling, and chopping up or bruising 1lb. of garlic, and soaking in 2 gallons of vinegar for two or three weeks. Then strain well through thick flannel, bottle, and cork.

Gas Tar, or Coal Tar.—See *Tar*.

Gaspereaux.—A North-American name for the ale-wife, a small kind of fish, largely exported in pickle to the Southern States and to the West Indies for the negroes. It is very dry when salted, but very good if eaten fresh.

Gauffres.—G. *Waffeln*.

The French word for "wafers," a kind of light and thin spongy biscuits.

These confections used to be home-made in nearly every French household. They are made in much the same way as *waffles*, and "marchands de gauffres" are yet to be met with in fairs, parks, and fashionable promenades, clad in white clothes and caps, baking their "gauffres" in portable stoves, and selling them well sugared and smoking hot on neat white plates. (See. *Waffles*.)

Gazogenes or Seltzogenes.—The *gazogène* is a portable apparatus for aerating waters on a small scale at home for domestic use. It generally consists of two globes, one above the other, connected by a tube, the lower containing water, and the upper the ingredients or powders for producing the aerated liquids. When water is gently introduced into the upper globe from the lower, by inclining the vessel so as to about half fill it, chemical action takes place, and the carbonic acid descends and gradually saturates the water in the lower globe. When this has taken place the aerated water can be drawn off by opening a stop cock at the top. Ales, wines, etc., may all be quickly aerated in the same way. By using a little fruit syrup very delicious beverages are produced.

Although the apparatus employed in Great Britain differs in construction and working from that used in the United States, still all apparati comprise two requisite parts—one for generating a gas and the other for mixing the same with plain water or with water containing the requisite salines or flavouring syrups.

Gazogènes are usually protected by network, but are still liable to burst or explode if not properly managed, and several serious accidents have occurred through careless or incompetent persons overcharging them. They are much more extensively employed in France than here.

Gazogène Powders.—The 2-pint size are retailed at 2d. or 3d. each; 3-pint size from 2½d. to 4d. each. Powders for 2-pint size should consist of 280 grains of powdered tartaric acid and 340 grains of bicarbonate of soda; for 3-pint size 340 of the former and 420 of the latter. The acid and the soda are usually packed in different coloured papers.

Gelang. —A fermented liquor made by the Malays from rice.

Gelatines, or **Grenetines.**—These are made by various processes from gelatinous animal substances, such as the cartilages, tendons, membranes, clippings off skins, bones and horns of animals, fish-scales, etc., in much the same way as glue is made. The material is usually boiled and treated with acetic and sulphuric acids, skimmed, strained, refined, and purified, to a greater or lesser degree of excellence.

The coarser kind of gelatine, got from hides, heads, hoofs, and horns, is generally made into *glue;* that from finer skin, such as that from calves' heads and membranes, *size.* In making gelatine proper the crude jelly first obtained has, of course, a very bad smell, but this is deodorised, and the substance, after being submitted to a heat of about 250° Fahr., and to various patent purifying and clarifying processes is finally poured hot on cooling slabs, cut up and dried on nets, or else rolled into thin transparent sheets, and may be sold either in that form or cut into thin shreds (straight or curly) or into lozenges.

Cox's Edinburgh Gelatine is said to be made from the South American ox. *Mackay's* of Edinburgh, from calves' feet. *Swineburne's,* from calfskin. *Nelson's,* from cuttings from the hides of beasts and calves. Real gelatines are only found in the animal kingdom, but they are sometimes substituted by or adulterated with so-called *vegetable* gelatines. This soft, tremulous, jelly-like mass obtained from fruits, vegetables, sea-weeds, etc., is spurious gelatine, and merely results from the half solution of organic principles known as pectine and pectic acid, *pectis* being, in fact, the Greek word for jelly. Medical opinion has, however, changed very much of late years as to the value of gelatine. Majendie has proved that dogs cannot live on jelly alone, and Liebig has clearly shown that gelatine is endued with no nutritive properties whatever, and that, unlike sugar and starch, it does not even minister to the development of animal heat.

The most beautiful gelatines come from France, where they are treated quite artistically, some clear as glass, and others variously and fancifully coloured. The French seem to run their sheets out marvellously thin, which gives them greater transparency and apparent freedom from colour, thus tempting the eye with great delicacy and purity, which transparency would at once disappear if made up into thicker sheets. Whether they are all really good or not, or what they are made from, is somewhat doubtful. Report says that rat skins, old kid gloves, etc., are utilised for the purpose of making gelatine in that country. Sometimes to free gelatines from unpleasant odours or to hide them, the products, besides being deodorised with antiseptics, are afterwards perfumed with musk, camphor, etc. Occasionally they are adulterated with salt, sugar, etc. Inferior gelatine is often of a dull colour, has an offensive smell, and makes goods taste tainted. To test gelatine, first soak it in cold water, then add some boiling water, when it should form a thick but clear and odourless solution; if a nasty smell arises, and it turns yellow and gluey, it should not be used for food. Gelatine has the power in a remarkable degree of solidifying a large quantity of liquid. In itself it is taste-

less, insipid, and of but little nutritive value; it is the wine or other flavouring that makes it agreeable; used alone, it would not keep a cat alive long. Gelatine is largely used by manufacturing confectioners in making calves' foot jelly, jelly tablets, soups, lozenges, etc., and by chemists for coating pills and other nasty drugs for swallowing. It is also employed by manufacturers as sizing for straw hats, for dressing crape, silks, blonds, laces, tulles, etc., and for a variety of other purposes.

Usually packed in 1lb. packets and sold wholesale in bags or cases of 1 to 4 cwts. each. To test the quality melt the gelatine, and the nearer it approaches to glue or size in smell or taste the worse it is.

Although hot water dissolves gelatine, which sets by cooling, it should be remembered that this property disappears after too long a boiling, and the liquid that remains will not again coagulate.

Leading Merchants.—J. A. Sharwood & Co., Ltd., St. George's House, London, E.C.; C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.; M. E. Holdsworth, 3 Norfolk Street, Bradford.

Gelatine Lozenges.—These consist of a solution of gelatine, highly flavoured with lemon, together with a slight taste of acid.

The solution is run on glass plates into sheets about one-sixteenth of an inch thick, allowed to solidify, and then removed and cut up flat, either with round punches, cutters, or by self-delivering cutting rolls. Being too hard to be cut by hand, these lozenges are awkward to make, and there are only three or four firms in England who attempt them.

Gelatine Paper, or Foil.—These various coloured glossy sheets of gelatine (sometimes called *Leaf gelatine*), and more or less transparent, about as thick as sheets of paper, are mostly made in France, where their production, although quite simple, forms a special branch of industry.

They are made either plain, coloured, or painted, with neat designs in gold or silver. Pure gelatine, or even ordinary glue, is allowed to swell out in water, and then dissolved in a water-bath. When the solution has partly cooled, the aniline colouring matter (previously dissolved in water) is added. If ordinary glue is used it requires clarifying with ¼ oz. of oxalic acid to every 6lbs. of glue. If only one side is to be glossy the gelatine solution is poured upon a ground glass plate, but if both sides are to be glossy it is dried between two glass plates (previously rubbed with Spanish chalk). Greater pliability is given to the foil by adding to the warm solution ½ pint of spirit of wine and ¼ oz. of sugar candy, or a small quantity of glycerine.

Gelatine foil or paper is largely employed in making artificial flowers, visiting cards, labels, sacred images, etc., and by confectioners in making cosaques, cake ornaments, and in wrapping small transparent packets of sweets. Prices of these leaf gelatines vary from 8d. to 1/9 per lb., according to fineness.

Gelatine Sweets.—(See also *Gum Drops*, *Jujubes*, etc.)—Gelatine and gum goods are made in many forms and shapes, by running into moulds while in the liquid condition. The usual substance in which the moulds are made is farina or potato starch. The dried and powdered starch is placed in trays and the surface smoothed and levelled. A wooden board is then taken bearing casts of the particular shape required, and pressed firmly on the smooth surface. By this means a mould is obtained in the dry starch. The liquid gelatine may then be run in from conical vessels by hand, or by a travelling machine, which runs over the trays. This travelling filter consists of a receptacle for the mixed material, carrying at the bottom spouts corresponding in number to the moulds in one row. The quantity of material passing to the moulds is regulated by a piston to each spout. The machine is placed on the special rims and the spouts arranged over the first row of moulds; by a rapid movement they are filled simultaneously, and the machine is pushed to the next row which is filled in a similar manner. The hands who work these machines become very quick and expert.

The moulds when entirely filled are put aside to set and dry, and then the goods are sifted out. In some cases this is done by hand. The tray of starch containing the set goods is tumbled into a bin, and the pastiles recovered by means of a sieve. The goods are, however, still more or less covered by starch, and so they are passed to other workpeople who brush them, and finally by means of hand-bellows or pipes connected with fans, clean them entirely from the starch. But in the principal factories a cleverly-invented machine does all this work. It stamps the moulds, fills them, and sifts out and cleans the goods at one operation. A tray filled with the goods in the mould is emptied into the hopper, and the empty tray placed at the end of the machine. The pastiles are sifted out, and the starch falls into an empty tray beneath, which has in the meantime been brought under the hopper by revolving chains. The goods are cleansed by an air current and shot out at the side, while the replenished tray moves on under a board which smooths and levels the surface. The moving tray is next brought under the cast which imprints the moulds, and finally moves beneath the filler, from which the moulds are filled. The trays thus emerge ready for setting again.

Genepi.—A French liqueur manufactured from Alpine plants. It is of very ancient origin, and chiefly consumed in the district around Lyons.

Genevrette.—F. *Genevrier.*

A kind of wine made on the Continent from wild flowers and juniper berries.

Genoa Paste.—See *Italian Paste, Macaroni, Vermicelli,* etc.

Gentian-root (*jen-shan*).—F. *Gentiane;* G. *Enzian;* W. *Crwynllys.*

Also known as *Felwort.* The dried root of a tall and handsome herbaceous plant (*Gentiana lutea*), with blue or yellow flowers, growing three or four feet high in mountainous districts of Burgundy, the Alps, Pyrenees, etc.

The whole plant is very bitter, but the roots only are sought after. They are generally dug out by peasants, and in commerce they are met with in tough brittle pieces from a few inches to about a foot in length, with thick bark of yellowish brown colour externally, and wrinkled. Gentian root tastes sweetish at first, but ultimately very bitter; forming an excellent stomachic, and is largely used in pharmacy.

Other species of the gentian plant, of which there are over 500, are often substituted, or mixed with the true or officinal root. A large amount of gentian extract is used by publicans and others in fortifying beer weakened by watering.

Gentian Spirit.—A bitter liquor made from gentian root. It is very popular with the Swiss mountaineers.

Geranium Oil.—*Ginger-grass Oil, Rosa Oil,* etc. These are cheap substitutes for otto of roses. Genuine oil of geranium is obtained by distilling the leaves and flowers of *Pelargonium capitatum,* or *Andropogan schœnanthus,* grown in Northern and Central India, with water. It is nearly colourless, but with greenish or yellowish tinge, somewhat resembling rose oil.

The best is now distilled in the Kandeish district of the Bombay Presidency, whence it is sent down to Bombay for sale by native brokers, and has recently become an important article of export. It is so closely allied to rose oil that it seems almost impossible to distinguish between them.

Turkish geranium, Rusa, or *Ginger-grass oil,* is obtained from *Andropogan schœnanthus* (ginger-grass), a plant cultivated in Persia, Arabia, and East India. It was first introduced about 1825, is of a deep yellow or brown colour, with the odour of rose oil and the oil of red thyme, but inferior to the true geranium oil. (See also *Lemon Grass.*)

The product is also extensively prepared from the rose geranium in Algeria, France, and Turkey, but is largely sophisticated with fatty oil. This fraud can be detected by the behaviour of the sample with dilute alcohol.

Pure geranium oil in two to three vols. of alcohol of 70 per cent. (by volume) at 20 degrees; if small quantities of fat are present the mixture is dull, or in case of large quantities, milky.

Patchouly, Cus-cus, and other perfumes are made from this oil.

Gerardmer Cheese.—This French cheese, often corrupted into *Géromé*, is produced in the Upper Vosges, taking its name from the little town of Gérardmer.

It is a soft make, of moderate quality, but highly appreciated by the labouring classes. It is made in the form of a disc about 8 inches in diameter by 3 or 4 inches in height, and is usually packed in a wooden box.

German Barm.—See *Yeast*.

German Paste.—A food for insectivorous singing birds, such as larks, thrushes, linnets, nightingales, etc.

It is mostly made of pea-meal, hard-boiled eggs, honey or sugar, butter or lard, hay-saffron and sweet almonds, say 1lb. blanched sweet almonds, 2lbs. pea-meal, 3 ozs. butter or lard, 4 grains saffron and the hard-boiled yolks of two eggs, with honey sufficient to make a paste; mix and pass through a sieve, or colander, and expose in the air to dry.

Another recipe:—Bruise a pound of rapeseed in a mortar and blow away the husks, then mix with powdered crumbs of stale bread. This will keep a week or two in a closed vessel; mix a little daily with hard-boiled egg.

German Sausages.—F. *Saucissons d'Allemande*; G. *Deutchlander Wurstchen*.

In Germany the varieties of sausages sold under distinct names are innumerable, and no country produces so great a variety, every district having its own favourite flavour of spice or herb. The universal consumption of these esculents probably accounts for the universal thirst for which that glorious country is deservedly famous! Those sent to England are first dried and then smoked, and are generally very wholesome and agreeable. English-made German sausages are also largely sold in the shops, and are generally made up in the same way as English sausages and then seasoned. The usual seasoning consists of four parts of salt, one ounce of black pepper with a little saltpetre, garlic, pimento, nutmeg, or sage. The sausages are then smoked for five or six days. A discussion once arose at the table of King Frederick William III. of Prussia on the taste of the pineapple, which everyone likened to that of the fruit he preferred to all others. His Majesty sent for a peasant boy, and, after bandaging his eyes, put a slice of pineapple into his mouth, asking, "What does that taste like?" "Sausage," answered the boy, without a moment's hesitation. The sausages of Brunswick, Gottingen, Gotha, and Frankfort are not less esteemed than the hams of Westphalia and Bayonne. The sausages of Nuremberg, as dished up in the "Blue Bell," delighted Goethe so much that he had them sent by express to Weimar.

German Wines. — Germany buys yearly about £1,000,000 worth more wine than she sells. Average annual production 51,705,610 gallons, thus occupying only tenth place among wine-growing countries.

The exports to England are now about a million gallons a year, value some £400,000.

The vineyards cover about 300,000 acres, and a great variety of grapes is grown. In the Rhine district the Riesling chiefly, Austrian and Kleinberger coming next; while at Assmanhaunshausen, at the foot of the Niederwald, the early Burgundy and Klebroth are grown, and produce the famous Assmanshauser red wine.

As in France, the *phylloxera vastatrix* has done much injury, but is fought by destroying the infected vineyards and the application of bisulphide of carbon.

German wines belong to what is known as the drier, lighter, and acidulous class of wines; requiring less alcohol in their manufacture than the French or Spanish, on account of the cooler climate, and are more specially adapted for the commencement of dinner. Most of them are "*white*" and of delicate aroma, but it is difficult to make them perfectly clear and bright, hence the origin of coloured glasses for their use.

Although the preparation of sparkling wines in Germany dates far back, it has only recently—under the protectionist policy—become a notable branch of the national industry.

In 1840, Kuhlow's "German Trade Review" gave the annual production as

250,000 bottles at most, but in 1873 there were 40 factories, and at present the sparkling wine factories have risen to 80, in which 8 to 10 million bottles are produced annually. All sorts of grapes can be used, but the early and late Burgundy and Klebroth suit best. In 1895 Germany imported about 3 million marks' worth of sparkling wines in excess of export. From France she imported 2,109 tons, and only exported 978 to Great Britain, 180 tons to Belgium, and 92 tons to the United States of America.

Alsace-Lorraine is the chief wine-growing district in Germany; it produced about 17,000,000 gallons in 1890, and the most celebrated wines are grown on the Rhine or its tributary rivers between Coblentz and Mayence, and are known as *Rhenish* wines; to the north of Coblentz the wines are of little comparative value. Wines of Saxony are of little worth. Meissen and Guben produce the best. Naumberg makes some small wines like inferior Burgundy. The choicest vintages are confined to a small district called Rheingan, which extends from Rhudesheim to Mentz (Wiesbaden Regency). The best vineyards are those of Bishofsheim.

The extreme durability of German wines is very remarkable, and this property most likely originated the custom of storing them in vessels of enormous magnitude.

The great *tun of Heidelberg*, made in 1751, was 30 feet long and 20 feet deep; the *Gruningen tun*, 30 feet long by 20 feet in diameter; the *Tubingen tun*, 24 feet by 16 feet, besides many others. Rhine wines in general are drier than the French white wines, and possess a delicate flavour and aroma called *gare*, which is quite peculiar to them.

The following are the sorts best known here :—

Assmanshauser.	Marcobrunner.
Brauneberger.	Niersteiner.
Deidesheimer.	Oppenheimer.
Geisenheimer.	Rauenthaler.
Grünhaüser.	Rothenberger.
Hochheimer.	Rüdesheimer.
Johannisberger.	Scharzberger.
Laubenheimer.	Sparkling Moselle.
Leisten-wein.	Steinberger.
Liebfraumilch.	Steinwein.

German Yeast.—See *Yeast*.

Geropiga, or **Jerupigia.**—A factitious liquor, made to imitate or adulterate port and other wines and beverages, and which used to be shipped in large quantities from Portugal as "wine."

This villainous compound is said to be made of one-third crude brandy and two-thirds unfermented grape juice, elder juice, etc., sweetened and coloured with brown sugar, rhatany root, logwood, etc.

Very injurious ingredients are sometimes discovered in it by analysts. (See *Port Wine*.)

Gervais Cheese or **Demi-Suisse.**—These are a small and very soft creamy French kind, now made by Mr. A. Gervais (sometimes mis-spelt "*Jervais*"), at Gournay, in Normandy, but were originally invented by that gentleman's father, who was a noted cook. They are made from a mixture of two-thirds milk and one-third cream. Three quarts of the mixture make a dozen cheese. This is set at a low temperature, and the coagulation takes about 48 hours. They require altogether about three days to make, and are eaten with sugar while quite fresh. These cheese are greatly prized in Paris, where they fetch nearly 3d. each (25c.). Each cheese, shaped like a small tumbler, and about 3 inches high by 2½ inches in diameter, is wrapped in paper and packed six in a light wooden box. Two or three truck loads of these delicious morsels go from the factory to Paris every day in Mr. Gervais's own railway trucks.

Gesho. — A native hop used in Abyssinia for making beer.

Gex Cheese. — A French kind, analagous to Roquefort cheese, and made from goats' milk in the Ain and Jura departments. It takes its name from the little town of Gex, which is its market centre. They weigh from 14 to 20lbs. each, and the greenish blue marbling is effected in much the same way as the marking of Roquefort.

Gex cheese is very highly appreciated locally, as well as in Savoy and around Lyons.

Ghee or **Ghi.**—A kind of liquid butter clarified, and largely used

throughout all Eastern countries, many parts of India, and an article of considerable trade. It is made from the milk of buffaloes and cows, and is boiled and coagulated by the addition of a little sour milk, called *Dhye*, before churning. After the butter is made, it goes rancid in a few days, and is again boiled, and all the water is extracted. A little salt and betel leaf is then added, and it is ready for bottling, when it will keep good for many years. It is not often relished by Europeans, but tropical climates preventing the use of hard butter as with us, ghee is highly esteemed by the natives, and preferred to olive oil. It is generally conveyed in dubbers or large bottles made of hide, and containing 10 to 40 gallons each. Considerable quantities are exported from Bombay.

Ghee or **Ghi.**—A name in India for fluid butter.

Gherkins or **Girkins.**—F. *Cornichons;* G. *Pfeffer-Gurken;* Sp. *Pepinos.* (See also *Cucumbers.*)

A small fruited variety of the cucumber, or small young cucumbers of the larger varieties gathered before maturity.

Large quantities are imported from Holland and France every year in hogsheads; the Dutch are sold at so much per hogshead, but the French by weight.

The parts of France noted for gherkins are:—Paris environs, for symmetrical appearance; Toulouse, for ordinary quality; and Burgundy, for fineness of flavour, but rather chubby and less sightly in bulk.

The gherkins are gathered almost immediately after the inflorescence is over, and while they are in the first stage of fructification. To be of *first quality* they should not exceed in size one's little finger, but in commerce they are met with in all sizes, although usually sorted into different grades. Some of the Paris growers and a few in Holland seem to possess the secret of cultivating varieties to any size required; but very few English gardeners can produce them of uniform size and shape. The best are not so smooth and bright outside, but covered with small protuberances like warts and of a dull dark green colour.

Retailers should beware of brilliantly coloured pickles. An artificial green colour is often given to gherkins—which in themselves naturally contain traces of copper—by heating them in copper vessels, and thus (by certain unknown chemical action) imparting to them a poisonous sulphate of copper, decidedly prejudicial to health, even in small quantities.

French picklers usually fill gherkins and green fruits into bottles of green glass.

For Gherkins, apply to Allen Jeeves & Sons, Seddington, Sandy, Beds.

Gin.—Arm. *Genevra;* F. *Genièvre, genivre;* It. *Ginepra;* Port. *Zimbro;* Sp. *Nebrina.* (See also *Hollands, Schiedam, Geneva,* or *Dutch Gin.*)

The word *gin* is either a corruption of *Geneva,* in Switzerland, celebrated for a similar liquor, or an abbreviated form of the French word *genièvre* (juniper berry).

Genuine gin is an aromatic spirit, or plain corn spirit, distilled from oats, rye, barley, or malt, and flavoured with essence of juniper berries. But instead of juniper the spirit is generally flavoured with the oil of turpentine, or creosote, and it has really become an artificial compound. It should be about half alcohol, and a very useful medicine in several diseases, especially of the kidneys and urinary organs. But almost every distiller or rectifier has his own mode of making or flavouring gin; indeed, British gin is now for the most part made by rectifiers of the low-wines of the Scotch and English spirit or whisky fabricators; and its alcoholic strength, as commonly sold, ranges from 20 to 48 per cent. of absolute alcohol, while the amount of sugar varies from 2 to 9 per cent. It must not, however, be sold weaker than 35° under proof without a special declaration of its strength.

Gin was originally, and for many years, wholly imported from Holland. After a time the distillation of an imitation of this sprung up in this country, and was known as *English Geneva,* or *Plymouth gin;* and the foreign spirit

was called *Hollands*, *Schiedam Hollands*, *Hollands gin*, or *Geneva*, to distinguish these from the home-made.

Gin used to be the popular drink with the lower classes in England, as was brandy with the aristocracy.

The year 1736 will be ever memorable in connection with gin. In that year its consumption had become so excessive that London and most large towns swarmed with drunken people from morning to night. It was very cheap; people could get drunk for a groat (4d.); and some retailers even exhibited placards in their windows that people might get drunk for a penny, and that clean straw was provided for customers in the most comfortable of cellars.

To stop its sale a duty of 20/- per gallon was imposed on gin, and this led to extraordinary agitation, riots, and violence during that and several years following, thousands of persons being imprisoned for violating the Act.

Old Tom.—The origin of the name "Old Tom" is uncertain. Some writers say it was given to a particular kind of gin distilled by one Tom Hodges in London; and more recently the firm of Boord & Co. have adopted this name and the figure of a tom-cat as a brand for their product. Others, however, state the term "Old Tom" arose about 1706, when the sale of gin in less quantities than two gallons was made illegal. A Captain Bradstreet fixed to a house taken for the purpose of evading the letter of the Act an old sign representing a cat, with a secret tube extended into the house; customers placing their money in the cat's mouth received a supply of gin through the tube without seeing or being able to swear by whom they were served.

English gin, as now sold by publicans, is, however, often vilely adulterated, fortified, or doctored, with more or less injurious concoctions—such as potato spirit, oil of turpentine, cocculus indicus, and roach alum—the latter being used to clarify it—carbonate of potash, tartar, and grains of paradise; concealed by the addition of salt, cayenne, coriander, fennel, crushed almond cake, liquorice root, cassia, cardamoms, or other aromatic flavouring substances. Alum can always be detected. Oil of vitriol is also used, and oil of almonds; that is for beading—in pouring the gin into a glass it must form a series of little bubbles which hang on the periphery of the glass. One dram of oil of vitriol, 1 of oil of sweet almonds, mixed in a mortar and with some stronger spirit, gives a beading to 100 gallons of gin.

Cordial Gin is a syrupy quality, more heavily sweetened, and aromatised with essences, spices, etc.

Tom and Jerry, another name once very common for gin, arose from Corinthian Tom and Jerry Hawthorn visiting Bob Logic in the Fleet Prison, and obtaining the prohibited liquor by whistling.

Ginep.—A name for the fruit of the *Melicocca bijuga*, which is very common in the West Indies, and occasionally imported into England.

Gin-fizz.—An American drink composed of gin, lemon-juice, and effervescing water, with or without sugar.

Gingelly Oil.—(Also known as *Ginjili Oil*, *Benne Oil*, *Til* or *Teel Oil*, *Oil of India*, etc. See also *Sesame Oil*.)—A bland fixed oil, expressed chiefly at Trieste, and Marseilles, in France, from Levant gingelly seed (*Sesamum orientale*), which yields about 50 per cent. of oil of three qualities:—about 30 per cent. of *surfine* from the first pressure; 10 per cent. of *froissage* from a second pressure, after the cake has been softened with cold water; and 10 per cent. of *rabat*, after the cake has been subjected to steam or hot water.

Gingelly oil is a valuable article of commerce, free from smell, does not readily turn rancid on exposure to the air. It is often mixed with or substituted for olive oil, and is used largely in soap-making; but in warm countries it is very popular in cooking.

Gingelly, Til, or Benne Seeds.—The seeds of the *Sesamum* or Benne plant, of which there are three varieties, the two best known being *Sesamum indicum* and *Sesamum orientale*. The plant is an annual, growing two to four feet high. It is a native of India, but now cultivated in most warm countries,

The leaves are very mucilaginous and readily impart this quality to water. The white seeded is called *Suffed-til*, and the black seeded *Kala-til*. The seeds have from ancient times been classed with the most nutritious grains, and yield about half their weight of oil (see *Sesame Oil*), and still form an important article of food in Asia and Africa. Large quantities of these seeds are imported into France, England, and America. They are often used by jam makers to imitate fruit seeds.

Ginger.—Ar. *Zingebeel;* Ben. and Hin. *Ada;* Da. *Ingefær;* Du. *Gember;* F. *Gingembre;* G. *Ingwer;* Ind. *Zingiber;* It. *Zenzevero;* Per. *Zunjebeel;* Port. *Gingivre;* Rus. *Inbir;* Sp. *Genjibre;* Sw. *Ingefara;* W. *Sinsir.* (See also *Mango Ginger, Galangal, Preserved ginger, Ginger marmalade,* etc.)

GINGER.

This well-known spice is obtained from the knotty fibrous roots of *Zingiber officinale*, a reed-like perennial plant, native of China and the East Indies, but also found growing wild in East Africa and Mexico, and now cultivated in several tropical countries, especially in Jamaica. (See *Jamaica Ginger.*) The sorts commonly met with are Jamaica, Cochin, Bengal, Tellichery, Japanese, and African, and these range in value from 90/-, 50/-, 40/-, to 28/- per cwt. They may be bought in various conditions —whole, ground, washed, unwashed, spent, scraped, and cut. A number of tea planters in Madras have taken up the culture of ginger. As the movement is in its infancy, it is as yet impossible to say if it will be a financial success. It flourishes best on rich well-drained clayey loam, from small pieces of the tuber planted about four inches deep and nine to twelve inches apart. In Jamaica it is planted in March or April, after which the whole ground is soon covered with long green leaves, alternate, nearly like maize leaves, and little flowers slightly tinged with green appear in September, when the stems of the plant are three to four feet high. The flowers and leaves rise from separate stems, those of the former are shorter than those of the latter, and only average from six to twelve inches in length.

The flowers having withered and seeded, the roots are dug up about the latter end of January. If left too long in the ground the tubers put forth stems, and then become fibrous, but if taken up earlier they are only about five or six inches long, very succulent, and suitable for preserving (see *Preserved Ginger*). The real *roots* of the ginger plant are the thin fibres which are given off from the knotty tubers, *races*, or "hands," as these are termed in commerce. The yield per acre is about 4,000lbs. Ginger may be cured as either bleached or unbleached.

The "*Black*" or *Stone-brown Whole Ginger* of commerce usually consists of the older tough or horny roots, and have been simply discoloured by scalding them in water and then drying in the sun. They are of inferior strength and flavour.

Whole White Ginger is usually of a superior quality, selected and prepared from the best and soundest "hands" and "joints" by scraping off the outer dark-coloured part and then carefully drying without scalding.

The bleaching or coating of gingers is usually performed after they reach the first markets, and is effected by burning sulphur or chlorinated lime and then covering with the sulphate or carbonate

of calcium, so as to protect it from the ravages of insects. The chief sorts are Cochin, Jamaica, and African. The best Cochin is the unbleached, new, dry, plump, heavy, and pale buff coloured. It is chalky or mealy inside without worm holes, and cuts softly and evenly.

African Ginger.—While unsuitable for many purposes on account of its coarse appearance and dark colour, harsh flavour, and inferior aroma, it really yields the highest percentage of oleo-resin, viz., 6 to 9 per cent., and the most pungent essence.

Whole Ginger, especially coarse African, is largely employed in making ginger beer, ginger essences, extracts, etc.

Washed Ginger is, or should be, ginger which has been cleansed in acidulated water to protect it from worms, etc.

Green Ginger is usually imported in casks, and in this state is used by wine makers, preservers, etc.

Leaf Ginger is ginger which has been sliced up into thin flakes.

Spent Ginger, often sold to grocers as "*Washed*" *Ginger,* consists of whole ginger which has been boiled, steamed, or otherwise exhausted in making cordials, ginger beer, etc. Frequently the best ginger is treated with a solvent, generally alcohol, whereby the extractive matters capable of being extracted are obtained, leaving only the woody fibre and starchy matters.

The extract is largely used by aerated beverage makers and confectioners.

The residuum (spent ginger) is afterwards sold at the factories at £2 to £5 a ton.

It generally falls into the hands of parties who either bleach it and dry it, or grind it up into powder. This is finally palmed off on to retailers, either as genuine whole ginger or mixed with pickling spice. If ground, it is either sold separately or mixed with other ground ginger, but, of course, these uses are illegal and subject the retailer to fine. Sometimes it is ground up and mixed in ground pepper.

Spent Ginger, of course, lacks the more valuable properties of the vital constituent, namely, the essential oil, and has little taste or smell of ginger, although it may contain certain ill-defined resinous bodies, and a slightly pungent taste. When whole, a hard, horny shell of dark colour may be noticed on cutting ginger that has been boiled and redried, while if it has undergone alcoholic extraction, usually weak spirit of wine, it will probably have a light, crumbly, disintegrated appearance. All the authorities are agreed that the percentage of soluble ash (soluble mineral matter) is the all-important factor for determining the proportion of exhausted or spent ginger in a suspected sample. Ginger cannot be extracted by water or by weak spirit of wine without removing a corresponding proportion of this substance, and its normal proportion never falls below a certain figure. The lowest on record is 1·41 per cent., and it is the only one. The next lowest are 1·70 and 1·71, so that 1·70 is a very low standard indeed to base upon. The average is 2·18, and the maximum 3·05 per cent. of soluble ash.

Ground Ginger.—The common adulterants to be expected in ground ginger are turmeric, wheat flour, husk of mustard seed, sago, etc. (See Section 9 of the Food and Drug Act of 1875.)

The following table shows ordinary mixings for eleven qualities of ground gingers. It will be noticed that only the first *four* are genuine, and the remainder compounds.

Quality.	Cochin G.	Jamaica G.	African G.	Rice flour.	Wheat flour.	Colouring.	Total in lbs.
1	14	—	—	—	—	—	14
2	2	1	—	—	—	—	3
3	2	1	1	—	—	—	4
4	1	—	5	—	—	—	6
5	6	4	—	3	—	2	15
6	—	14	—	2	—	1	17
7	4	—	4	3	1	2	14
8	21	21	7	21	—	10	80
9	4	5	5	20	—	5	39
10	—	14	14	42	42	25	137
11	—	—	28	42	42	25	137

The *colouring* compound used consists of equal parts of potato flour and wheat flour, to which finely ground turmeric of best quality is added.

The chief use of ginger is as a condiment or spice, but it is also used as an aromatic and stomachic medicine. The stimulant, aromatic, and carminative properties render it of much value in atonic dyspepsia, especially if accompanied with much flatulence, and as an adjunct to purgative medicines to correct griping. Externally applied as a rubefacient it has been found to relieve headache and toothache. The rhizomes, collected in a young green state, washed, scraped, and preserved in syrup, form a delicious preserve. Cut up into pieces like lozenges and preserved in sugar, ginger also forms a very agreeable sweetmeat.

Gardner's patent "Rapid" Sifter and Mixer, freely used for above. Prices from 50/- to £100. Catalogues from Wm. Gardner & Sons, engineers, Gloucester.

For genuine Gingers, apply to Hedley, Gamble, & Crosfield, Circus Street, Liverpool; or W. & D. Harvest, London.

Gingerade.— An aerated beverage flavoured with ginger.

Ginger Ale.—(See also *Temperance Drinks.*)—An effervescing drink similar to ginger beer, with a little harmless colouring matter to simulate that of ale, and probably so called for sake of variety. Messrs John Gratton & Co., chemists, Dublin, were the original makers, but they neglected to patent it. A bottle is easily made from a few drops of essence of ginger, or capsicum extract, sugar, and colouring, and then filled up with carbonated water (see *Aerated Beverages*). Occasionally a little mucilaginous or similar matter, known as *Froth*, *Heading*, etc., is added to give a "good head."

Ginger Ale Powder (Belfast).— Powdered white sugar, 16 ozs.; bicarbonate of soda, 3½ ozs.; powdered citric acid, 4½ ozs.; essence of ginger 1½ ozs.; essence of cayenne, 4 drms.; and essence of lemon, 40 drops.

Dry the soda, acid, and sugar very carefully; before drying the sugar, incorporate with it the essences thoroughly, to which a small quantity of caramel may be added as colouring.

Gardner's patent "Rapid" sifter and mixer, freely used for above. Prices from 50/- to £100. Catalogues from Wm. Gardner & Sons, engineers, Gloucester.

Ginger Ale Syrup. — Mix 2 ozs. tartaric acid, 6 drms. caramel, 4 drms. liquid extract of quillaia, and 8 ozs. of water; when filtered pour it into 7½ pints of sweetened water (plain syrup) and add the following mixture:—2 ozs. soluble essence of ginger, 1½ drms. tincture of capsicum, 1 drm. essence of vanilla, and 3 drops of oil of cinnamon.

Ginger Beer. — An effervescing beverage made by fermenting ginger, cream of tartar, and sugar with yeast and water, and bottling before the fermentation is completed. The carbonic acid generated within the fluid gives, after a few days or weeks, an aerated drink; but this variety of ginger beer is also an alcoholic drink, for the fermentation which is set up by the yeast in a part of the sugar gives rise to a little alcohol, as well as to carbonic acid. Two per cent. of alcohol is the strict legal limit, but it often contains 3 or 4 per cent. (See "*Non-alcoholic Beverages.*")

There are numerous recipes for ginger beers, but none of the *brewed* products will keep good for long in varying temperatures, so that they cannot be conveniently exported to distant hot climates:—

1. Pour a gallon of boiling water upon ¾lb. of loaf sugar, 1 oz. each of ground ginger and cream of tartar, and the peel of one lemon. When cool add the juice of the lemon and a tablespoonful of yeast. Cover it, and let it stand till the next day; then strain it, taking care not to stir up the sediment, bottle it in stone bottles, tie down the corks, and it will be fit to drink in two days.

2. 1lb. lump sugar, 1 oz. bruised ginger, ¼ oz. cream tartar, a sliced

lemon, and a gallon of boiling water. Mix, and when lukewarm, or 70° F., add 1 oz. of yeast, stir and let stand for 24 hours, skim, strain, and cork in stone bottles.

3. Take 3½ ozs. of cream tartar, 4 ozs. powdered ginger, 2lbs. sugar, 2½ ozs. lemon juice, 2 gallons water; digest when lukewarm; add 1 oz. of German yeast; skim and bottle tight.

4. To 1¼ oz. cream of tartar add 1½ oz. bruised ginger, 2lbs. white sugar, the peel and juice of two lemons. Bruise the ginger and lemon peel with ½lb. of sugar in a mortar; put all together in a pan, and when lukewarm two tablespoonfuls of good yeast; let this ferment ten hours, drain clear, cork tight and tie down; will be fit for use in ten hours.

5. Boil 22 ozs. bruised ginger in three gallons of water for thirty minutes; add 20lbs. white sugar, 18 ozs. lemon juice (or eighteen small lemons sliced), 1lb. honey, and fifteen gallons water. When cold add the white of one egg well mixed with a quart of the liquor. Let stand three or four days, then strain and bottle.

6. Aerated ginger beer is also manufactured by merely passing aerated or carbonised water into bottles containing a little syrup of ginger.

7. Mix 3lbs. moist sugar, 8 ozs. of crushed (not ground) ginger, ½ oz. tartaric acid, ½ oz. cream of tartar, and put all into a tub or pan-mug, and pour on four gallons of boiling water; stir well, and when nearly cool mix ½ oz. German yeast in a little of the liquor, and then add it to the rest. After standing 12 hours, skim, bottle, cork, tie down, and pack them away upside down.

A more palatable beverage may be made by using more sugar, but that will soon produce more alcohol than the Excise permits to be sold without a spirit licence. Many shopkeepers have been heavily fined for selling such, and for this reason saccharine is now largely used instead of sugar.

The *Ginger Beer Plant* is an impure yeast or leaven, different from ordinary brewers' yeast (*Torula*) or German barm, although a microscopic fungus closely allied to the former. The cells are of various shapes, and are bound together by myceloid filaments, which increase with the free access of air. The peculiar flavour imparted to the liquid has been attributed to small bacteroid cells. It has the remarkable property of effecting the fermentation of saccharine solutions containing ginger, and is largely employed for home-made ginger beers, commonly put up in stone bottles. (See also *Ginger-pop*.)

Ginger Beer Powders. — These are put up in packets ready mixed, by most wholesale druggists and manufacturing drysalters, and the following recipes may be quoted as examples:—

1. 4lbs. carbonated soda, 4¼lbs. tartaric acid, 16lbs. icing sugar, 1lb. best ground ginger, all well dried and mixed, and then flavoured with 1 oz. essence of lemon, and passed through a fine sieve. It should be bottled and well corked and kept in a dry place. A large teaspoonful of this stirred in half a tumbler of cold water makes a very nice ginger beer.

2. Bicarbonate of soda, 30 grains; white sugar, 1 drm.; powdered ginger, 5 grains; mix for each blue paper. Put 25 grains of tartaric acid in each white paper. Both to be mixed in a tumbler of water.

3. Sugar, 2 drms.; sesqui-carbonate of soda, 2 scruples; ginger, 4 or 5 grains; essence of lemon, 2 drops; mix for each blue paper; and in each white paper put 35 grains of tartaric acid.

4. Sugar, 10 ozs.; carbonate of soda, 624 grains; ginger, 192 grains; mix for twelve blue papers. For twelve white papers divide 360 grains of tartaric acid.

5. Use lemonade powders, and add to the waters some essence of ginger while mixing.

Special Firm.—John May, 114 Church Street, Croydon, packs good ones at 2/6 per doz.

Gingerbread. —F. *Pain d'épices.* Made of wheaten flour, treacle, or

golden syrup, moist sugar, butter and eggs, and flavoured with ginger, mixed spice and lemon peel. Sometimes carbonate of ammonia or tartaric acid is used to make it light.

The top is usually glazed with a solution of gelatine, say 1 oz. dissolved in a pint of water. It should be painted on directly the gingerbread comes out of the oven.

Another way: Mix 6lbs. flour and a little ground ginger with three pints of treacle, and knead into a good stiff paste.

Besides its classic pavement form gingerbread has for centuries been made all over Europe in many quaint shapes, such as crowns, mills, animals, noted personages, etc., and frequently decorated with comfits of various colours, icing-currants, stains, etc. Although the late M. Thiers once remarked that no man could call himself truly great until seen in gingerbread, these ancient forms are now oftenest met with at fairs and in remote country districts.

Scotch Gingerbread.—Take 9lbs. flour, 6lbs. golden syrup, 2½lbs. butter, 3lbs. moist sugar, 1 oz. ground nutmeg, 1½ oz. mixed candied peel, ½lb. chopped almonds, and about 16 drops essence of pear (if wanted lighter, add 1 oz. cream tartar and ½ oz. carbonate of soda). Simmer the butter and sugar in the syrup, let it get cold, then mix into the dry ingredients. Make out 3lb. or 4lb. blocks, with impression on the top, or into smaller sizes, and bake in a solid oven. Use glaze when baked.

Several old provincial towns—Ormskirk, Congleton, Grantham, Grasmere, Wrexham, Whitby, etc.—have long been more or less famous for their respective gingerbreads, gingerbread biscuits, spice cakes, etc.

In France, Paris, Rheims, Dijon, and many other towns have also long been noted for their "Pain d'épices"; rye flour is used, and in the best qualities honey instead of syrup, while the upper surface is often ornamented with split almonds, lemon or orange peel, angelica, etc. (See *Nonnettes.*)

Gingerbread Plums.—The large farinaceous fruit of the gingerbread tree (*Parmarium macrophillum*), a rosaceous tree of Western Africa.

Ginger (Candied).—A stomachic sweetmeat consisting of the young root-stocks of ginger.

Ginger Cordial. — An aerated beverage flavoured with ginger.

Ginger Essence. — An alcoholic tincture popularly used as a culinary flavour. It is made in several ways:—

1. 6 ozs. sliced ginger, 12 ozs. rectified spirit, 4 ozs. water, 4 ozs. lump sugar, 2 drms. cardamom seeds; macerate twenty-one days and filter or else percolate.

2. 1lb. ginger, 4 ozs. cloves, 2 ozs. cayenne, 1 pint rectified spirit, 2 pints proof spirit; macerate fourteen days and filter.

3. 1 pint rectified spirit, 6 ozs. unbleached ginger, digest fourteen days and filter.

Gingerette.—How made: Infuse in 1 pint of pure spirit (or gin or whisky), 3 ozs. bruised ginger, strain with pressure; add 1½lbs. of sugar and 2½ drms. of citric acid; dissolve in three pints of water.

Ginger-grass Oil.—See *Geranium Oil.*

Ginger Marmalade is easily made by slicing jarred ginger and reboiling it with the syrup, adding a liberal proportion of glucose and water. Profit, cent. per cent.

Ginger Nuts (Biscuits).—Of course, in factories, they are made by elaborate machinery, but the following will afford an idea of their composition:—4lbs. flour, 2lbs. moist sugar, 1lb. butter, 2 ozs. ginger, 2 ozs. golden syrup, ¼ oz. carb. soda, and 8 drops lemon essence.

Mix butter and sugar, then rub them into the flour, and afterwards mix the whole with the syrup; roll out on sheet and cut out, wash with milk and bake in slow oven.

Ginger Pop.—A weak or inferior make of gingerbeer.

Ginger Snaps.— Thin brittle biscuits flavoured with ginger; or, an inferior kind of ginger nuts, and usually about the same size, but darker in colour.

A small mixing would be 2 quarts of molasses, 1 quart water, 18 or 20lbs. flour, 2½lbs. lard, 4 ozs. ground ginger, and 5lbs. light coloured moist sugar. Mix in the usual manner, roll, cut with plain round cutter, add a little cinnamon or cassia, and 2 ozs. saleratus.

Ginger Tea.—A very useful remedy for flatulence, and usually made by infusing root or whole ginger in boiling water.

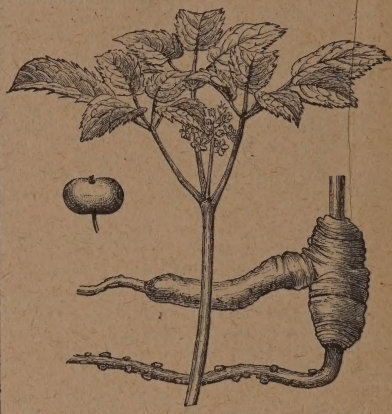
Ginger Wine.—(See also *Unfermented Wines.*)—A British wine or liquor, generally made with water, sugar, lemon rinds, ginger, yeast, raisins, and frequently fortified with added spirit and a little capsicine.

Ginger Wine Essence.—A mixture of burnt sugar and "gingerine," acidulated with tartaric acid, and flavoured with a few drops of lemon oil; but a superior quality is made from 3 fluid ozs. of essence of ginger, ½ oz. soluble essence of lemon, 1 oz. tartaric acid, 2 fluid ozs. liquid caramel, 1 drm. tincture of capsicum, 20 minims oil of ginger, with syrup (sugar and water), to produce 8 fluid ozs.

Ginseng.— G. *Kraftwuzel;* Ind. and Per. *Chobchini;* Port. *Ginsilo.* (Also known as *Chinese-wood*, *Ginsani*, and *Schinseng.*)

The root of a kind of ivy, *Panax quinquefolium*, in Chinese Tartary and in several parts of Corea and Japan. The dried root as imported is about the size of one's little finger, frequently forked, transversely wrinkled, of a horny texture, and of a yellowish white colour both inside and out. It was formerly thought to be a very valuable medicine, but in Europe this belief has been well-nigh exploded. The wealthy Chinese, however, still ascribe extraordinary virtues to it, and are its chief buyers.

Wild Manchurian ginseng in China used to be worth its weight in gold, marvellous "repairing" qualities being attributed to it.



GINSENG.

The production of ginseng is the chief industry of Song-do, in Corea. The country around that city is nearly all given up to the cultivation of the plant, which is highly esteemed as a food tonic by the natives, but especially by the Chinese and Japanese. The seedlings are planted in rows in raised beds, and are protected from wind and rain by a reed-thatching some 3 feet in height. The annual crop in Corea is about 15,000 catties.

Red ginseng, so-called, is only made at Song-do, and is specially prepared for the Pekin market. The roots are placed in wicker baskets, enclosed in earthenware pots with holes in the bottom, and then set over boiling water and steamed for one to four hours, according to the age of the plant. It is afterwards dried until it assumes a hard, resinous, translucent appearance, which is a proof of its good quality. Two catties of the "*white*" or natural ginseng are required to make one catty of the clarified product.

The "*White*" *ginseng* is widely consumed in the form of broth by the Coreans, who have long had the greatest faith in it as a cure for all

forms of disease. The roots having been well stewed, the Corean epicure wraps a napkin round them, squeezes them, and then drinks the juice. *Quinine* is, however, said to be superseding the use of ginseng among the natives.

In England it is made up into lozenges; also a much-vaunted wine. There is another variety, known as *Panax quinquefolium*, which grows chiefly in Canada and the northern United States. The roots are not used until the plant is six years old. It was for a long time looked upon as a weed, till the Chinese immigrants recognised it, and it is now highly valued in China.

Gin Sling is a corruption of the name *John Collins*, a London waiter, who invented a famous cooling drink composed of gin, soda water, lemon, and sugar.

Glass Cloth and Glass Paper.—(See also *Emery Paper*, etc.)—These are prepared by covering paper or thin cloth with glue and then scattering finely powdered and sifted glass over it, old wine bottles often being ground up for this purpose.

Glass Paper is sometimes miscalled *Sand Paper* (which see). They are made extensively at Birmingham, and sold in sheets. Used for polishing fine wood and metals, which require a superior polish. The cloth is not so brittle as the paper.

Glauber's Salt.—This is a sulphate of soda, and is usually made in winter only by decomposing common salt with sulphuric acid. It also occurs in sea water and in some mineral waters, as in those of Püllna, Carlsbad, etc.

In Wyoming, U.S.A., there is in the oil district a lake of glauber salt covering about 110 acres. It consists of a solidified mass of practically anhydrous sodium sulphate, with 6 per cent. of carbonate, 1·5 per cent. of chloride, and 6·9 per cent. of water of crystallisation. Glauber salts are also got from the Great and Little Marmishausk Lakes in the Tomsk Government of Siberia, 125 miles south-west of Barnaul. The total area of these two lakes is about 2½ square miles, and the layers of sulphate are about 2 feet thick, yielding over 1,500 tons a year.

Used mostly in the manufacture of soda, ultramarine, and glass, also as a purgative. Glauber was a German chemist.

Glaze for Cookery.—Usually sold in skins.

This consists of gelatine dissolved and mixed with caramel, burnt onions, or other colour, say about 3 ozs. of any good brand of gelatine to each quart of stock. The meat or joint is simply dipped in the fluid before the latter sets.

Another kind is produced by boiling a shin of beef and a knuckle of veal in 6 quarts of water. When seasoned to taste it is slowly boiled down to about 1 quart, and when required for use it is warmed up and brushed over the cooked tongue or other meat with a soft brush or feather. It is also often made by cooks boiling down some bottom stock. The hams or tongues must be perfectly cold and wiped dry before applying the glaze, which also must itself be nearly cold.

Glasgow Magistrates.—A jocular name for Red Herrings.

Gloucester Cheese.—A rich and highly coloured variety of cheese, made of two qualities—*Single* or *Berkeley*, round and flat, about 17lbs. each, and *Double*, weighing 28lbs. to 40lbs. each. The former is supposed to contain half, and the latter all the cream of the milk. They are both made by the sweet process, a smaller quantity of rennet being used in turning the milk, and this renders them mild tasted, delicate in flavour, and pleasing to most palates.

Gloucesters are generally made twice a day, the temperature at which the milk is set being 85° F. The curd should be collected with the utmost care, and cleanliness be the characteristic of every operation, and as the cheese is allowed to ripen slowly it is expensive to make, but when made

properly and matured perfectly it is an excellent mild cheese. The ordinary composition of a Single Gloucester has been given as:—Water, 21·41; casein and albumen, 49·12; fat, 25·38; and ash, 4·09. There is, however, a tendency to make both Single and Double Gloucesters of same quality, and often the only difference is in the size, the single being thin and the double twice the thickness. They are generally hard and good keepers, semi-buttery without being friable, and much milder than Cheshire. Also made in Wiltshire.

Occasionally they are made pale or white, but very rarely. Gloucesters after drying are usually scraped clean and painted with Spanish brown, but both the interior and exterior colourings are at best only fashionable mistakes.

Glove Powders.—Sometimes made from Castile soap, dried by exposure to a warm dry atmosphere for a few days, and then reduced to a fine powder.

Another is made of pipe-clay coloured with yellow ochre, umber, or Irish slate, and afterwards scented with a little powdered orris-root or cloves. Used for cleaning and colouring gloves made of doeskin and similar leather.

Glucose or Starch Sugar.—(See also *Grape Sugar*, *Dextrose*, etc.)—Glucose (so called from the Greek word *Glykos*, although Glycose should be the proper spelling), both in liquid and solid state, originally came from Germany. It first appeared in the London market in the seventies, and was quoted at 30/- to 32/- per cwt., but may now be bought at 7/- or 8/- per cwt.

The liquid glucose of commerce is a variable product, an imperfect sugar, prepared by the action of acids on starch. It is a very thick, white or water-coloured syrup, obtained from the starch of wheat, potatoes, also from wood and other vegetable substances, but chiefly from yellow maize (Indian corn). Liquid glucose is usually made much thicker than treacle, and may be rolled in cold wet hands and thrown like a snowball. Immense quantities are made, especially in America, where it is called *Corn sugar*. Buffalo is the chief seat of the trade, although one factory alone in Chicago turns out over 100 tons a day. Technically it is known as a mixture in varying proportions of two sugars called *dextrose* and *maltose*, and of *dextrine*, or starch gum, by submitting the starch to the action of dilute sulphuric acid, which is afterwards neutralised and removed as sulphate of lime; a small quantity of cane sugar is sometimes added to give flavour. Glucose is altogether inferior to cane or even beet sugar in sweetness, but is only about half the price. There is, of course, no sweetening power whatever in dextrine, whilst that of dextrose is infinitely less than that of invert sugar. Indeed, ordinary glucose has only about one-third the sweetening effect of cane sugar, but it is copiously used in making jams, marmalade, jellies, syrups, caramels, condensed milks, lemon-cheese, meat extracts, etc., which are sold by weight. Glucose is also used by tanners for the "weighting" of leather, as well as for the production of alcohol, sauces, piccalilly, and other pickles, for fermenting purposes, and particularly by brewers in sweetening and giving body to beer and pale ale. It is a frequent adulterant of honey, golden syrup, treacle, etc. The thickest and freest from colour is the highest in price; but reckoning the sweetening power of cane sugar at 100, that of white liquid glucose is only 30 to 40. Although the import now reaches about 100,000 tons a year, we know of no particular use for it except as an adulterant. The saccharine property was first discovered in raisins, and in its solid crystallised state is better known as *grape sugar* (which see), while glucose is the name popularly applied by chemists to the liquid form.

In Germany glucose is obtained chiefly from potato-starch, but the American product is preferred. The "hard" or "solid" product, contains a little of dextrine, and frequently gallisine, but the "liquid" contains

much more, and it is owing to these elements that glucose will not crystallise.

It matters not, however, from what material the starch is obtained so far as the quality of the glucose is concerned. It has been made from chips, sawdust, and shavings, and the chemical composition is invariably the same; but, as already shown, *yellow maize* has been found to be the most convenient material for making large quantities. It results from the acidulous fermentation of the starch or fecula. In the process of manufacture the starch is usually boiled with sulphuric acid and water, and the product, instead of being very sour, is found to be fairly sweet.

The acid changes the starch to sugar, but is not itself affected in the least. Powdered chalk is then thrown in, which unites with the acid and settles to the bottom, leaving a clear, sweet solution of liquid glucose. It is perfectly harmless, and even somewhat nutritious; in fact it is more assimilable than cane sugar itself; but although it is sometimes said to contain 80 per cent. of "sugar," that sugar bears no comparison with cane sugar in sweetness, and is nevertheless only a factitious sweetening article, consisting rather of amylaceous matter in a state of incomplete transformation. Common glucose often contains a slight impurity due to the presence of sulphates, but the best makes are practically free from sulphate. There is a considerable difference between brands of glucose, in fact no two firms make the same sort. Some are prepared with crude vitriol and lime (*calcium hydrate*), and in some cases oxalic acid is employed. Glucoses may also be the same colour and guaranteed "44 degrees," but not really of the same strength.

The kinds denominated "41" and "43" are chiefly used to imitate golden syrup.

Imports, 80,506 tons in 1897, 94,352 in 1898, and 91,280 in 1899; nearly all from America in 6 cwt. casks. Prices 6/- to 10/- per cwt. German glucose is generally in 8 cwt. casks. The solid is sold in 1 cwt. bags.

Special Importer.—M. E. Holdsworth, 3 Norfolk Street, Bradford.

Glue. — Da. *Liim;* Du. *Lijm;* F. *Colle;* G. *Leim;* It. *Colla;* Port. and Sp. *Cola;* Rus. *Klei;* Sw. *Lim;* W. *Glyd.*

This is made from the hoofs, hides, ears, tails, intestines, and similar kinds of animal garbage obtained from slaughter-houses, tanyards, etc., and may be termed an evaporated solution of the above, as well as those of old horses, diseased animals, etc.

The stuff is first soaked in tanks of quick-lime water for two or three weeks. This eats off all the hair, and at the same time acts as an antiseptic. The material is then washed and dried, and the process is repeated with stronger lime.

After this it is placed in network bags or in a copper vessel, with a perforated bottom fixed inside the outer one, so as to prevent burning, and there it is boiled slowly and gently, and skimmed from time to time, until it is fairly clear and evaporated to the proper consistency.

The solution is then run off and strained into square deep wooden cooling boxes wider at the top than at the bottom. These when full and partly cooled are turned out, and the jelly while soft is cut up by wires like soap into thin cakes, which are again cut by a wet knife to the size required. These strips or slices are then laid on trays of netted wire arranged in a frame or stand and dried till hard. Afterwards, to give them a bright polished appearance, they are dipped in clean cold water and again dried.

English glue is considered the best; it should be free from spots, clouds, waves, or cloudy lines.

Colour is not a reliable guide as to quality, but for cementing purposes the strongest is that made from hides of the larger and older animals, and is of a deep brown or semi-transparent claret colour; but this may, of course, be given artificially to other weak

kinds, such as those made from bones.

Glue loses strength every time it is remelted, therefore that newly melted is the strongest.

The hotter the glue is used the firmer it will hold. The addition of a little powdered chalk to glue strengthens it.

A considerable quantity comes from France, also from Italy, in bags, barrels, and cases.

Vegetable Glues and Sizings are obtained from the roots and underground stems of the palmetto, or other similar plants. The roots are cut up or disintegrated, and then submitted to about 300° F.; water is added, and the pectinous matter being thus extracted it is afterwards filtered, clarified, and concentrated to the jelly-like or solid density desired. It is with difficulty soluble in cold water, but possesses a considerable adhesive quality, and is much cheaper than animal glue, dextrine, etc.

An *Impermeable Glue.*—Soak ordinary glue in water until it softens, and remove it before it has lost its primitive form. After this dissolve it in linseed oil over a slow fire until it is brought to the consistency of a jelly. This glue may be used for joining any kind of material; and, in addition to superior strength and hardness, it will resist the action of water.

Bookbinders' Glue.—The best carpenters' or white glue, to which, after soaking and heating, one-twentieth its weight of glycerine is added.

Bank-note Glue, or *Mouth Glue*, is made by boiling 1lb. fine glue or gelatine in water till condensed to a viscous solution, then stirring in about ½lb. moist sugar, and finally running it through a net into moulds. Some add a little lemon juice. It is also made with 2 parts of dextrine, 2 of water, and 1 of spirit.

Waterproof Glue (sometimes called *Chinese Cement*) is made by boiling isinglass in milk, and is used to piece or repair glass, china, wood, etc. A cheaper sort of water-resisting glue is made by boiling 1lb. of common glue in 2 quarts of skimmed milk.

Special Firms.—Armour & Co., manufacturers, Chicago, U.S.A.; London address: 8 and 9 King Street, West Smithfield, E.C.; and C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Gluten Foods.—(See also *Fecula.*)—Gluten is a Latin word meaning glue or paste, and is the nitrogenous, gummy, or nutritious part of the flour of most grains, but especially of wheat and rye; hence our so-called Gluten Flours. It is found chiefly just inside the outer husk, and may easily be got at by washing meal or dough in a bag in water till all the white colour or starch be washed away, and what remains will be the sticky, tough, elastic, and glue-like substance called gluten.

Gluten is the base of "Turkish Delight," also of macaroni, vermicelli, and certain other pastes. Wheat gluten ferments very easily, but not so that of maize and rice.

It is very strengthening, and almost insoluble. Wheat contains 10 to 18 per cent., according to whether grown in a hot or cold country. English wheat contains 10 or 11 per cent. only, Algerian about 16 per cent. Rice contains very little.

Gluten is an important constituent in the blood, and it is that which causes blood to congeal. It is on the physical and chemical character of gluten that the baking quality of flour largely depends.

Gluten flour is mainly used as a substitute for ordinary flour in making bread, cakes, biscuits, etc., for persons suffering from diabetes, so that the conversion of starch into sugar in the human laboratory may be reduced as much as possible.

Gluten is the most nutritious part of wheat flour, being equal to that of flesh meat, but its preparations are not by any means so palatable as those made from ordinary flour. Hard wheat contains most, and the best qualities contain from 12 to 18 per cent., but it is chiefly obtained from the waste products in the manufacture of starch.

Gluten consists of three substances—vegetable *fibrin* (insoluble in boiling water), *mucin* (separates on cooling), and *glutin*. The purity or impurity of gluten flour is easily tested by washing the weighed flour in a muslin bag in clear water and then drying and re-weighing it. Any competent cook can make a good gluten flour by merely washing out the starchy matter from ordinary flour.

Gluten Bread is merely baked gluten, sometimes just in the state in which it is extracted from the meal, and sometimes mixed with a little bran, almonds, or some other flavouring to suit various palates. Gluten is often sold alone in a granulated form for soups, etc. *Bran Biscuits* are also supposed to be free, or nearly free, from amylaceous matter, but often contain far too much.

A great number of *bogus* gluten flours and starch-free foods are now being sold; but they are really frauds, and contain almost as much starch as does ordinary flour. One sample recently examined was three-fourths starch, yielding 0·715 gm. for each gramme of flour.

Occasionally ordinary "Seconds" flour is sold as gluten flour, at a correspondingly advanced price, and ordinary bread can be made from most of the brands on the market.

Glutiana.—See *Strichetti*.

Glycerine.—A bright, sweet, and pure syrup, without colour or smell, and technically described as the hydrate of the trivalent radical *glyceril*. It is found ready formed in some fats and oils, but is chiefly obtained by the saponification or decomposition of fats and oils, and especially as a by-product in the manufacture of candles and soap.

Besides being thus obtained spontaneously, it is also expressly prepared by a process for the purpose. Although identified by Scheele in 1789, and more distinctly still about the year 1831, by Guy Lussac and De Melly, it was not considered of any value, and used to be run into our rivers by soap and candle makers, along with soap lyes and other refuse, until 1844, when some of its excellent qualities were discovered by Mr. Thomas De la Rue.

Instead of being now wasted, it is carefully separated by several methods. One way is to treat the fats with steam at a very high temperature, or with water under a very high pressure. A third plan is to employ either sulphuric acid or lime, or caustic soda and water, each of these re-agents being able to transform the fats into fatty acids and glycerine.

Some 14,000 tons a year are thus recovered in soap manufacture, and 26,000 tons from stearin works, while the world's annual production of glycerine is calculated to average about 40,000 tons, and England now leads in the manufacture. Glycerines vary in specific gravity from 1·23 to 1·3, the standard of the British Pharmacopœia is about 1·25 at 60° F. Fine pale brown is usually about 1·25, and half-white 1·26; those of inferior quality have a disagreeable smell, and are sometimes coloured. When pure it is freely miscible with water and alcohol in all proportions, but with oil it only emulsifies, and does not perfectly blend. Excess of water renders the retailer liable for adulteration. Another adulterant is glucose syrup, as much as 45 per cent. having been recently discovered by analysts.

The purest glycerine is prepared by distillation; for although not volatile without decomposition, yet it passes over undecomposed in the vapour of water, and may be concentrated by evaporation. It is used in soap and paper-making, cosmetics, calico-printing, and perfumery. Wine merchants and brewers use it in wines and beers, to sweeten them, give body, and make them keep longer. In medicine it is used for dissolving drugs; as an emollient dressing for scalds, burns, etc.; and occasionally used internally, as with cod liver oil.

It is the best of all remedies for chapped hands, lips, nipples, etc. Diluted with water, it will generally allay itching from any cause. Infused in water for the toilet, it imparts a healthy clearness and a sensation of softness, smoothness, and coolness to the skin, and prevents chaps and other affections.

It is remarkable for not evaporating or turning rancid under any ordinary conditions. It can be charged easily with any kind of perfume, and is professedly

used in many varieties of soap, but is not alone a guarantee of excellence in soap, because some of the other ingredients are often as deleterious as the glycerine is beneficial, and for any evil consequences the glycerine should not be held responsible. Certain samples of glycerine have, however, recently been found which contained appreciable quantities of arsenic, hence it should always be selected and used with caution, or serious results may occur. When pure it is a drug endowed with certain active medical properties. It is used both as a medicine itself and as a vehicle for other medicines.

The Russians rub glycerine on their hands and faces as a protection from frost-bites. A little mixed with the water in a gas meter will help to keep it from freezing, and a little rubbed lightly over shop windows in frosty weather will prevent the opaque icy substance forming, which so often accumulates and obscures the glass. A little added to common ink gives it an excellent copying capacity.

Glycerine also when mixed with nitric and sulphuric acid forms that terrible but useful explosive known as *Nitro-Glycerine.*

Glycerine was first patented by Price's Candle Company, but now much distilled glycerine comes from Germany. As ordinarily sold retail it is, however, frequently diluted or adulterated to a degree which deprives it of the greater portion of its good qualities.

Apply to C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Glycerine Jelly. — Produced as follows:—

(1) Mix 4 ozs. of glycerine with 2½ ozs. soft soap, and stir in 4 or 5lbs. of almond oil, perfumed with 2½ drachms of thyme.

(2) (*Solid*) French gelatine, 120 gr.; glycerine, 1½ ozs.; water, ½ oz.; otto of rose, 1 drop.

(3) (*Carbolated*) 1 oz. isinglass, 16 ozs. glycerine, 3 ozs. water, 1 dram carbolic acid.

Glycerine Jujubes.—Usually prepared from the finest gum, sugar, etc., and distilled glycerine.

They are particularly useful in cases of sore throat, cold, etc. Apply to Jas. Epps & Co., Ltd., Homœo. Chemists, London.

Glycerine Soap (Transparent) may be made of lard with almond oil, palm oil, and nut oil, to which glycerine is added. It is sometimes made by melting very mild soap, and adding glycerine, free from lime, and sugar at the rate of 1lb. of each to 4 or 5lbs. of soap, but, as a matter of fact, the majority of so-called glycerine soaps contain no glycerine whatever.

They are generally perfumed with bergamot or geranium, mixed with a little oil of cassia and perhaps a little oil of bitter almonds. Some makers use a scent made up as follows for each cwt. of this soap:—6¾ ozs. rosemary oil, 3½ ozs. orange peel oil, and 1 oz. each of oils of cassia, thyme, and myrbane.

Glycose. — See *Glucose* and *Grape Sugar.*

Goa Powder. — As imported, this consists of lumps of a yellowish substance composed partly of powder and partly of pieces of wood. It is obtained from the plant *Andira araroba*, and its active principle is Chrysophanic acid; useful as a cure for ringworm and other skin diseases.

Godfrey's Cordial.—See *Soothing Syrups.*

Godiveau. — Meats dressed with ordinary veal stuffing are termed "au godiveau."

God-stone.—See *Sami-stone.*

Gogo Root.—A drug derived from *Entada scandens*, a leguminous plant growing in the Philippines. It occurs in pieces from 2 to 3 feet long and about 2 inches across.

Gola.—A name in Ladakh (Cashmere) for ball tea, a mixture of green and black, with rice-water to bind it.

Gold Leaf.—F. *Or en feuilles;* G. *Blattgold;* Sp. *Oro en hogas.*

Gold-leaf is classed as *singles*, *doubles*, or *trebles*, according to its thickness, and sold in books, each containing 25 pieces, the dimensions being three and a quarter inches square. They are placed between the paper leaves of a book, which are rubbed with red chalk to prevent the gold from adhering. The book should

be warmed before using, so as to make the leaves quite dry, and easy to detach one from another.

Gold-beating by hand is tolerably simple. The hammered metal, brass, or tin-plate, is laid on a massive anvil and beaten with hammers; to produce the greatest expansion of the metal, the hammer and anvil must both be convex; the convexity of the latter is of great importance. The sheet becomes so thin after a short time, that the further beating must be done with the sheets between animal skins. Great care must be taken that the skin is perfectly even and covers the whole sheet, which must be smaller, so as to give room for extension. The beater endeavours never to strike twice consecutively in the same place, and moves the skin after every blow. It requires considerable practice to ascertain when the body of the metal has the required thinness, as a fold will be produced by any doubling, and the separation of the leaves, sorting, etc., must be done very carefully between tissue paper, all draught being guarded against during the operation.

There are several different tints of gold-leaf varying from deep orange-red down to a pale silvery hue. Gold-leaf made in England is thicker and larger than that produced in the United States. Pale leaf gold is an alloy of silver and gold beaten into leaf. Dutch gold is copper-leaf coloured yellow by the fumes of molten zinc. It is much cheaper than gold-leaf, and useful for large surfaces, where it can be protected by varnish. Without such protection it becomes discoloured.

Golden Rod Tea.—See *Blue Mountain Tea.*

Golden Syrup—(See also *Treacle* and *Molasses.*)—Golden Syrup has only been known under this name since about 1860. It was first produced by a Mr. Munn, and is properly a refined treacle, obtained from cane sugar. It is much more agreeable to the taste, lighter in colour, and clearer than either treacle or molasses, and is, or should be made by re-boiling and filtering the liquid which drains from crystallised cane sugar in the refinery, after all the sugar that can be profitably extracted from the raw sugar has been separated. Such syrup, when genuine, still contains a small quantity of crystallisable sugar together with the uncrystallisable, also colouring matters and certain substances which give to the syrup its peculiarly agreeable flavour, but the exact nature of which is not known.

It is considered superior in flavour, and is sold at a higher price than either treacle or molasses. Imitations of Golden Syrup have, unfortunately, of late years been made up largely from glucose, flavoured with the refuse-molasses of a refinery, and, although very attractive *in appearance* for table use, they are altogether inferior to either golden syrup or common treacle. Some are adulterated with beet syrup or "inverted" beet sugar. They vary in sweetness according to manufacture, but the practice with refiners of adding glucose or starch syrup professedly "to prevent or retard granulation" has gone on until the name of "Golden Syrup" has almost degenerated into a synonym for mere glucose and water, 60, 70, 80, and even 90 per cent. being often found in it, and those who have so long been perpetuating the deception are now claiming the right to continue it. Of course there is scarcely any sweetening power or aroma in glucose. Some of these spurious syrups contain about 15 per cent. of cane sugar refuse, but with about 85 per cent. of glucose and water added. Other makes contain no *cane* syrup at all but merely inverted beet sugar and glucose, and are scarcely sweet. Retailers miss their own interests by giving their customers such stuff, and it is pitiful to see a useful commodity like genuine Golden Syrup driven out of existence by such artificial fabrications. We also fail to see why retailers should make themselves the scape-goats of either foreign beet growers or British refiners, or why they should be so ready to endorse the moves which these gentry suggest. The retailer's true friends are *his customers*, and he would do far better to exert himself in their behalf. He knows perfectly well when a customer asks for "golden syrup," or "syrup," that cane sugar syrup is meant, and not glucose and water. This glucose and water (glucose alone would be too

thick), costing about a half-penny per pound, is not there for the benefit of either the consumer or the grocer, but for the pocket of the manufacturer only. Why should retailers, by foisting it off, help manufacturers thus to cheat? If people want glucose and water, they will ask for it. But what shopkeeper quotes or tickets "Glucose!" How many more grocers will be fined and disgraced in the eyes of the public in order to enrich these manufacturers, who, labelling the stuff with specious jargon about the public good and prevention of crystallisation, etc., are merely seeking to evade the law and to deceive the poor? What grocer ever had complaints of cane syrup crystallising?

Syrups may possibly sometimes ferment, caused by too much exposure to the influence of vegetable germs, but not two grocers in a thousand ever had it go out of order, and any respectable firm would take it back without hesitation. The simple remedy for that fermentation is to replace such syrup in the cask, and burn a small quantity of sulphur in the cask, by placing a small flower pot with hot coals in the bung hole, and sprinkling a little powdered sulphur on them, taking care to cover the whole so as to keep the fumes in for a short time. This usually kills the germs, and the fermentation ceases. If not, heat the Syrup to about 180° F.

Dr. W. Blyth says that Golden Syrup should consist of about 39 per cent. of cane sugar, 33 per cent. of crude (inverted) sugar, 2·8 per cent. of extras and colouring matter, 2·5 per cent. of salts, and 22·7 per cent. of water.

A few firms, and a few only, now sell the genuine article, but amongst these are :—Graham Brothers & Hay (refiners of Cane Syrup), 16 Stanley Street, Liverpool; and The Pure Cane Sugar Co. (J. Philip & Co., agents), 4 Fenchurch Buildings, London, E.C.

Goldwater, or **Dantzig Water.**—F. *Eau de Vie de Dantzig*; It. *Acqua d'Oro.*

A light liquor or cordial, very sweet and strong, made in Dantzig. Originally it was nothing else but brandy, in which had been macerated rosemary flowers, cinnamon, aniseed, grains of paradise, cloves, cubebs, liquorice, etc., to give it taste and colour; afterwards minute portions of gold leaf were added.

In the mind of the middle ages gold was held to be the remedy for every evil. It was put in drinks, victuals, pills, elixirs, tinctures, etc., and even in baths, to please the public fancy, and Dantzig water or gold water survives a host of similar compositions.

A quantity is now made in France and elsewhere.

Gombo. — See *Gumbo.*

Gommer, or **Amel Wheat.**—Ger. *Dial.*

A kind of black corn, *Triticum amyleum* (Amel wheat), husked and prepared for food in Darmstadt, where it is very popular as an ingredient for soups.

Gonyonha, or **Congonha.**—See *Matè Tea.*

Goor.—See *Gur.*

Gooseberries (gorse or prickleberries). — Da. *Slikklesbær*; Du. *Kruisbes*; F. *Groseilles à maquereau*; Ger. *Stachelbeeren*; It. *Uvas Spinas*; Port. *Uvas espims*; Sp. *Grosellas*; Rus. *Kryzhovnik*; Sw. *Stickelbär*; W. *Grwysen.*

A familiar fruit of the thorny little shrub, *Ribes gros sularia,* indigenous to the North of Europe and Asia, but most popular in England. They do not appear to have been cultivated before the 17th century, and a hundred years ago did not attain half the size they are now grown.

They ripen as far north as Norway, but do not thrive in warm climates. Large quantities are grown in Meath, Ireland. The earliest berries come from Havre, Honfleur, and other French ports, also Holland.

Red gooseberries contain the most acid, but some are very sweet. White varieties vary much in quality, and green sorts differ materially; some have thick skins and poor pulp, others are thin-skinned, with sweet or even rich juice; and yellow varieties range

from the lowest to the highest in flavour.

Gooseberries, both wholesome and pleasant, may be eaten either raw (when ripe) or cooked, when they make excellent jam, jelly, wine, and vinegar; but the unripe fruit makes the best tarts and puddings, either when fresh gathered or bottled.

The French name for this fruit arose from a custom, now very rare in that country, of placing a few of the ripe berries around mackerel when roasting it in the oven.

Gooseberry fool is a corruption of gooseberry *foule*—that is, milled or compressed gooseberries.

Bottled gooseberries.—Green gooseberries are the leading fruit used for bottling (see *Bottled fruits*), and the most suitable berries for the purpose are those known as "Crown Bobs" and "Warringtons," preferably the latter. The fruit for this purpose should be gathered when full grown, but still hard and green—not in any way approaching ripeness—and bottled at once, before they sweat or become flabby, and lose one of their best qualities—namely, *crispness*.

The filler should use a small round stick, so as to pack the berries tight, but without bruising them, for they shrink afterwards, and if filled loosely the bottles look only three-parts full.

Bottled gooseberries, closely corked and sealed or capsuled, should keep good three or four years, and improve in flavour.

Other excellent varieties are the *Lancashire Lad*, *Keepsake*, *Whitesmith*, and *Whinham's Industry*. (See also *Cape Gooseberries*.)

On fruit farms green gooseberries are usually gathered by women and boys at the rate of about 1d. per stone or 2d. per half-sieve, according to crop. For *London* markets the baskets contain 28lbs. of fruit. The sides are lined, the paper being sufficient to allow of the two sheets lying over one another when turned down to screen the fruit and keep it clean.

Ripe gooseberries for market must only just have assumed their colour when gathered or they will split open and spoil.

Gooseberry Jam.—(See also *Jams, Preserves*, etc.)—Any sort of gooseberry will make a good jam, but the best for the purpose are the green "Cockspur," the red "Ironmonger," and the rough red "Warrington" gooseberry.

First remove the blossoms and stems of the berries and throw out all damaged ones, then put 14 ozs. sugar to every pound of fruit into a pan, with a pint of cold water; place it on the fire, and commence to stir until the sugar melts; it may then be stirred only occasionally until it gets nearly ready, when it will require stirring continually until finished. As it begins to boil thick take out a little on the bottom of a cold plate. Stand it in a cool place for one or two minutes; if it congeals it is done, if not, boil a little longer and try again. The moment you see it congeal on the plate lift the pan off the fire, and commence to pot the jam.

A learner, when trying jam by this old method, should lift the pan off the fire until he sees whether it sets on the plate, as the bulk may be overdone or burnt while the sample is cooling.

The best method to test jam is by dipping the spoon or spaddle into the boiling liquid, and holding it over the pan while boiling; if the jam is done it will drop off in webs, if not it will run off thin. Considerable practice is required to test jam in this way; but when acquired it saves time, and the consistency is more uniform.

Goose-breasts. } Smoked Pome-
Goose-legs. } rian goosebreasts and legs are saleable commodities in high-class neighbourhoods. They possess a fine flavour, and are done up in skins.

Gorgonzola Cheese (or *Stracchino of Gorgonzola*.—A very fine and rich Italian kind. Average weight 16lbs. Composition: Water 43·56, casein and albumen 24·17, fat 27·95, ash 4·32. It is very like ripe Stilton in quality, though differing from it in shape and size. It is said to be made of two

curds, from rather poor milk and without pressure. It ripens in about 18 weeks, and is cured in a draughty cellar. The interior of this cheese grows a green mould (*Penicellum glaucum*), and is usually skewered to promote its growth.

It is only during the latter half of the present century that this cheese has come into repute. Its manufacture is said to have originated in the following manner: As soon as the cold weather of the autumn approaches, the cows have to leave the Alpine pastures for those in the plains, and the milk they gave during the journey could not be made into cheese in the ordinary way, but while still warm was curdled and hung in cloths from the cart of the herdsman, each successive milking being added, so that at the end of the journey the cheese so produced was salted and called *stracchino* ("strache" meaning, in the Milanese dialect, tired cows). As the first halt in the plains was usually made at Gorgonzola the cheese got the name of *Stracchino of Gorgonzola.*

In the course of time, and in order to meet the increased demand for this cheese, it became an article of special production instead of a makeshift as at first, and its manufacture has now extended not only all over Lombardy, but even to the district of the Lomellina, in Piedmont.

The rennet is added to the milk as soon as it is drawn from the cow, enough being used to produce coagulation in half-an-hour. The curd is then broken up; that of evening milk is ladled into cheese cloths of about three gallons each, and hung on pegs to drain until morning. In the morning the milk is similarly treated, except that the curd is drained for a quarter of an hour only. The two curds are then filled into wooden hoops, inside each of which a cheese cloth has been placed to form the rind. Care is taken to keep the warm curd of that morning's milk outside, so that it will unite and form a smooth crust. The cold curd of the previous evening's milk is placed in the centre, and from this arrangement arises the peculiarity of Gorgonzola cheese. The two curds of morning and evening milk, warm and cold, never thoroughly amalgamate, and it is in the cracks and crannies thus left that the blue mould grows as the cheese ripens. The story that the blue mould of Gorgonzola is produced by inserting copper wire and instruments into the cheese is absolutely untrue. During the first day the cheese is turned three or four times, and then daily for three or four days, when salting begins. When to begin and leave off salting is a matter in which the experience and skill of the maker are most displayed. After salting is completed the cheese is taken to the drying-room and kept there for several days until bright pink spots begin to show on the crust. Four or five months in the curing cellar, and turning every alternate day, complete the ripening, when the cheese is ready for the market. Inside these cheeses, and especially those made during the journey down the mountains, are found the greenish marks vulgarly termed "erborine."

After the manufacture of the Gorgonzola is over for the season—say, November—another quality of rich cheese, called *Crescenza*, is made in the provinces of Milan and Pavia. It is soft and slightly acid in flavour, and has lately come into importance by reason of the Parcel Post system.

These cheeses are known as the *Stracchini of Milan.*

The best qualities grow a peculiar red fungus on the outside, and to imitate this many are covered with brick-dust and flour. Gorgonzola cheese has a pretty large sale, but it is considered very indigestible, and, like Stilton, it is used more as a condiment than a food. Much is now made in England and elsewhere to imitate the genuine.

They keep best if left in the ordinary packing until wanted for use.

Although not properly soft cheese, Gorgonzola should be treated as such on account of its rather perishable nature. Being very brittle and easily

broken, great care should be taken in removing them from packages, and they should never be piled more than two high or the weight will crack the bottom one. They should be kept cool, but never in a draught, nor should they be allowed to freeze, and they should be cut with a wire.

Gouber Nuts.—See *Ground Nuts.*

Gouda Cheese.— (See also *Dutch Cheese.*)—An excellent kind of Dutch cheese, round and flattish, shape of a curling stone, and is said to be the best kind made in Holland.

It is salty, but not so much so as Edam. It is both red and pale coloured, and classified as "good useful," "fine," and "finest." It is supposed to owe its pungent taste to the practice adopted in Holland of curdling the milk with hydrochloric or muriatic acid, instead of with rennet. This also preserves it from *mites.*

Factory Goudas are usually made of skimmed milk in Friesland, and in both England and elsewhere they are closely imitated. (See also *Derbyshire Goudas.*)

Goundry's Consolidated Tea.—Simply the ordinary tea of commerce pressed into blocks by hydraulic pressure. Tea, in its ordinary state as sold, contains an average of 8 per cent. of water, and in making the consolidated tea almost 6 per cent. of water is pressed out. This would at first sight seem an advantage, since one would expect more tea to be left; the fact is, however, that the gain is quite counter-balanced by the loss of the extractive portion of the tea which is forced out along with the 6 per cent. of water.

Gourds.— Sp. *Calvasinos*, or *Calabasas.*

A very large family of cultivated plants and their various fruits pass under this name, such as pumpkins, vegetable marrows, squashes, melons, cucumbers (which see). The "gourd" mentioned in the Book of Jonah was probably a species of *Ricinus.* The word "gourd" is also applied to the dried and hollowed skins, cases, or shells of these fruits, which are used as bottles, dippers, funnels, and small dishes. The whole of the gourds are very rapid growing annuals, with broad leaves, yellow flowers, and long rough trailing stems. They are natives of warm climates, but many kinds grow well in Britain. One of the best is the *Great Gourd* (*Curcubita maxima*), of which the green-fruited *Spanish Gourd* is a variety. The largest of all is the *Great Yellow Gourd* (*F. Potiron*), and grows up to 200lbs. weight, and takes a globular form some 8 feet in circumference. *The Warted Gourd* (*C. verruno*), a very hard skinned kind covered with large warts, and *the Musk Gourd* (*C. moschata*) are less hardy than the others; also the *Orange Gourd* (*C. aurantia*). Gourd leaves and young shoots are often used as a substitute for spinach. Bitterness of taste in either fruit or leaves betrays the presence of colocynthus, and such should be discarded. Ripe gourds will keep good a long time in a cool, dry, well-ventilated place, and may be cut and used at different times as required.

At Nice, in France, there is a Gourd Festival held yearly in the Square of the monastery of Cimiez, where gourds of all sorts and sizes may be seen painted and decorated in profusion.

Gourou Nuts.—See *Kola Nuts.*

Grafting Wax. — Subjoined is a valuable formula for making liquid grafting wax. It was kept a secret, and sold at a high price for a long time. All who have used it speak of it as being the best preparation for covering wounds in trees which has ever been discovered.

Melt 1lb. of common resin over a gentle fire, add 1 oz. of beef-tallow, and stir well; cool a little, and mix with it a tablespoonful of spirits of turpentine, and then add 7 ozs. of 95 per cent. alcohol. The alcohol will cool it so rapidly that it will be necessary to put it again on the fire, stirring it constantly and with the utmost care to prevent the alcohol from getting inflamed. To avoid this the best way is to remove from the fire when the lump

commences to melt, and stir and repeat until the whole is a homogenous mass, similar to honey. It should be put on with a painter's brush. After a few days' exposure to the atmosphere in a thin coat it becomes as hard as stone and impervious to water and air.

Grained Soaps. — Also known as *Boiled Soaps*. These terms are used to define soaps that have been remelted and worked afresh for making fine toilet or medicated soaps.

Grains.—See *Brewer's Grains*.

Grains of Paradise.—(See *Cardamoms.*)—Also known as *Guinea Pepper*, *Guinea Grains*, *Melegueta Pepper*, etc. The seeds, not of a pepperwort, but of the *Amomum Granum Paradisi*, and best known by their modern name "*Amomi*," a species of Cardamom, which are very hot, acrid, and pungent, and slightly aromatic. They are small and angular in shape, and of bright black colour outside, but perfectly white inside. Imported in casks, etc., from the coast of Guinea, East Indies, and Africa, where they are very popular with the natives for flavouring foods. In ancient times these "Grains de Parys" were used as a spice in English cookery, but are now chiefly used here for making stimulative kinds of cattle medicines or powders. They are said to be also frequently employed for giving a false body to beer, vinegar, fermented beverages, and spirituous liquors, such as wines and spirits—especially to gin—and increasing thirst. Penalty for so using them is £200, or for vending them to brewers £500, but this has been commonly evaded by the chemist selling them to the brewer's or publican's friend.

The capsules or dry berries of *Capsicum fruitescens* are often erroneously sold, even by druggists, under the name of "Guinea Pepper."

Gram.—See *Chick Peas*.

Granadilla, or **Grenadillo.** — The fruit of the Passion flower (*Passiflora quadrangularis*), a kind of pomegranate. They are egg-shaped fruits, and vary in size from gooseberries to turnips. They are used as a dessert in many tropical countries. Sometimes made into conserves, jellies, etc., and to some palates the flavour is very agreeable and the juice refreshing.

The name is also used for the edible fruit of other allied species of plants.

One variety of the plant is grown in our English gardens for the sake of the flower. In Madeira there are two varieties, the larger being a golden-coloured, oval-shaped fruit, and the smaller when ripe of a deep purple-brown tint. The taste and fancy for this fruit is not very keen at first, and the relish for it, like that of many other tropical products, has to be acquired.

Granilla.—An inferior quality of cochineal, prepared from the half-grown or smaller particles and dust of a lesser species of the cochineal insect. It includes the garblings or siftings got in preparing the better kind, and only yields about a third of the colouring matter of the true cochineal.

Mostly imported from the Canary Islands, but a Mexican product is often substituted or used as an adulteration for both cochineal and granilla. It consists chiefly of a species of *lady-bird*, which are merely parasites of the real cochineal insect (*Grana sylvestra*). Wholesale, 3d. or 4d. per lb.

Granulated Sugar. — Sugar which has in manufacture been stirred during the crystallisation of the concentrated syrup, and thus formed into small disintegrated crystals or grains, instead of being allowed to compact into a mass or lump as in loaf sugar.

Granuline. — A German cleansing and washing preparation, consisting principally of carbonate soda, soda soap, with traces of salt and sulphate of soda.

It is a whitish-yellow brittle substance, somewhat fatty to the touch, and having a slight bergamot odour. It is readily soluble in hot and cold water, forming a fluid which has a strong alkaline reaction; 100 parts of granuline contain 87·5 per cent. of soap and 12·5 per cent. of carbonate soda.

Grape Fruit.—See *Forbidden Fruit*.

Grapes.—Da. *Druer*; Du. *Druiven*; F. *Raisins*; G. *Trauben*; It. *Grappoli*,

Grappi; Per. *Ungor;* Port. and Sp. *Uvas;* Rus. *Vinoghrady;* Sw. *Drufoa;* W. *Grawnwin.*

The native country of the grape vine cannot be determined satisfactorily. It is of prehistoric antiquity. It appears indigenous to many parts of the world, but the origin of the cultivated fruit is unknown. Grapes were cultivated and wine made in Egypt 4000 B.C., and we read that Noah, 2348 B.C., "planted a vineyard."

The men sent by Moses in 1490 B.C. to search the land of Canaan "came into the brook (or valley) of Eshcol, and cut down from thence a branch with one cluster of grapes, and they bore it between two upon a staff."

The Phœnicians first introduced the vine into Europe—Greece and Italy, whence it spread into France and other parts of the Continent.

England is considered too cold and damp for out-door grape culture, although between the 11th and the 14th centuries they were grown somewhat extensively in Essex, Isle of Ely, Lincolnshire, Cambridgeshire, Bedfordshire, Hants, Surrey, Derbyshire, and Gloucestershire. The latter was the chief wine district of England.

It would appear that vineyards were fairly successful as long as they were connected with the abbeys and priories of those times, and because many of their inmates were foreigners understanding vine culture.

These well-known, pulpy, and luscious fruits are produced in clusters from different species of the vine in all warm climates, but in Europe they are principally grown in France, Italy, Spain, Portugal, Germany, and adjacent islands. They are of the genus *Vitis vinifera*, and there are over 1,500 varieties, mostly grown for making into wine, although many kinds are used for eating fresh, or dried and made into raisins.

It is estimated that there are about 20 million acres of land in the world under vineyards, and that of this total France owns nearly one-third. In France and Germany the vines are cropped down as small bushes and tied to stakes, but in Italy they are trained over elm and poplar trees, running from branch to branch. Large quantities are now coming to English markets from Cape Colony. They arrive in cases holding about 18lbs. The white or green varieties closely resemble "Almerias," but are much superior in flavour. Fresh green grapes in vast quantities are imported in small barrels about 50lbs. each from Malaga and other parts of Spain. *Almeria grapes.*—About 300,000 barrels of these favourite dessert fruits are exported yearly from the port of Almeria, in the South of Spain, one half of which come to England. The early-coloured varieties, known as "Castiza," "Uva de Casta," "Rosadas," and "Imperiales" begin to arrive at the ports of Liverpool, London, etc., at the latter end of September, and the others continue to pour in until December. The prices vary from 10/- to 40/- a barrel, and the total crop averages about 750,000 barrels. The *phyloxera vastatrix* has done much damage, but the cultivation of new vines is extending in Tabernas, Nijar, Beija, and Ohanies. The chief shipping variety is there called "*Uva de embarque.*" These fruits come in tubs, called half-barrels, packed with cork-dust.

As many as 30,000 and 50,000 barrels of grapes reach England weekly in the season, which runs, say, up to Christmas. Each half-barrel holds about 48lbs. of fruit. Those brands which are known to be keepers are bought by market packers principally; these are men who buy and pack goods to the provinces. They swarm around Covent Garden and other public fruit markets, and rent large cellars in which the barrels of grapes are stored, to be sold later on by the barrel, or turned out and cleaned with a pair of bellows and a clean black lead brush, by being put up in what are termed dozens, that is, shallow boxes holding 12lbs. of fruit each. The profits on their sale after they have been stored two or three months are very large, and, in fact, independencies have been made by men experienced in the keeping qualities of the brands that are sent to Pudding Lane and

other centres for sale by the fruit brokers. There will thus be greater competition than ever in the future between the late Almerias and the Cape grapes in the early spring months of the year.

Denia grapes are of earlier growth by a few weeks than the true white Almerias, and come first into market; then follow the tinted growths. Barrels weigh about 25lbs.; Malaga half barrels, 14lbs.; Lisbon half boxes, 50 to 60lbs. The grapes raised in Greece, the Ionian Islands, and Asia Minor are mostly dried into currants and raisins. (See *Currants, Sultana Raisins*, etc.) The best table or dessert grapes are not the best wine grapes, nor *vice versâ*. The famous Thomery and Chasselas growths, for example, with their thick skins, crisp pulp, and abundance of sugar, melting like a bonbon, are of delicious flavour, but are not at all wine grapes, because they yield very little juice; yet they fetch 5/- to 6/- per lb. in the Paris markets, whence they are distributed all over Europe.

Unripe grapes and grapes from certain climates contain much malic acid. Vendée grapes have been found to contain as much as 15 grammes of *tartro-malate* per litre. In certain white wines the malic acid sometimes exceeds the total tartaric acid.

The *Black Hamburgh* is the popular grape of Britain, and of the *white* grapes (so-called) the *muscat*, of Alexandria, is considered the choicest and most valuable. English hot-house grapes, produced with all the advantages of modern structures and modes of heating, combined with skill in cultivation, surpass all others in size of bunch, berry, and high quality.

Finest English hot-house muscat grapes fetch highest prices, varying from 2/- to 10/- per lb. according to season. *Jersey muscats* come next in value; Belgian hot-house only bring half the price of English. The above are to be had wholesale from green fruit merchants in baskets of 6 to 12lbs. each, and in neighbourhoods where people have money, they sell well.

Ripe hot-house grapes keep best when cut with a few inches of the wood attached, and before the grapes are damaged by wet or cold. If the choicer bunches are hung up with the lower end of the shoot in a bottle of clear rain-water, in an inclined position, they will keep quite good and fresh from the end of September to January or February. The temperature may vary from 35 to 50°, but they must not be exposed to frost. They should be looked after almost daily, and any decayed berries should be removed. A little charcoal should be put in the water to keep it sweet. The atmosphere of the room or cupboard should be fresh and dry, but if too dry the grapes will shrivel.

Another good way to keep grapes fresh and sound is to pack them in plenty of peat-dust in wooden boxes and store in a cool, even temperature.

Grape-Seed Oil. — Used in the Levant for purposes of illumination. The extraction is principally effected at Modena. Thirty-three pounds of seeds yield about 13 quarts of oil (or about 18 per cent.). The colour is yellow, and the oil loses about 25 per cent. in purification. The seeds of white grapes yield less oil than those of the dark variety, and young vines are said to be richer in oil than older ones. As to the French varieties the Rossillar, Aube, and Hernault seeds yield 2 per cent. more than Bordeaux seeds. The oil resembles castor-oil, and on treatment with sulphuric acid yields a Turkey-red dye.

Grape Sugar.—(See also *Dextrase, Glucose*, etc.)—This is the name given to solidified glucose, and may be produced from the same substances as liquid glucose, its formula being $C_{12}H_{14}O_{14}$. It does not exist (as its name would imply) in the juice of grapes, but is formed therefrom in small incrustations on raisins, etc. It is this which gives honey its sweetness, but it has only about one-third the sweetening power of cane sugar.

The methods pursued in nearly all the refineries are, however, now iden-

tical. Wet starch obtained from potatoes, or Indian corn, etc., is boiled in so much sulphuric acid and water. This acid makes part of the oxygen and hydrogen in the water unite with the carbon in the starch, and turns it sweet, after which the acid is taken out with chalk.

Chalk is carbonate of lime (carbonic acid and lime), and the sulphuric acid at once combines with the lime and frees the carbonic acid gas, which at once passes off in the air as a gas, while the sulphuric acid and the lime form into sulphate of lime or gypsum, and is easily removed, leaving the sweet syrup, which is then boiled down or evaporated until the sugar crystallises.

The production of grape sugar and liquid glucose is now mostly carried on in America, where maize is most plentiful and cheap, but large quantities are also made in Germany from potatoes, which are specially grown for the purpose over a great extent of land in certain districts. Grape sugar or solid glucose is usually imported in 1 cwt. cases, but most users prefer the liquid glucose.

The grade known as *Chicago Chips* comes in bags.

Graphite, or Plumbago. — The mineral from which "Black Lead" is prepared. (See *Black Lead.*)

Grate Black. — See "*Komo*" *Enamel.*

Gravy Colouring Salt. — See *Browning.*

Grease-proof Paper.—See "*Vegetable Parchment*" and "*Waxed Paper.*"

Greaves, or Graves.—The sediment from melted tallow, consisting chiefly of animal membrane mixed with fat. Usually made up into cakes, and prepared as a coarse food for dogs, etc.

Grecian Wines. — The calcareous soil throughout nearly the whole of Greece is highly favourable to the growth of the vine, but the productions are variously described. Even when good, sound, and firm-bodied, they have generally a resinous or turpentine flavour. It is the custom there, after washing out the wine presses, tubs, etc., to rub them with resin obtained from certain pine trees, that of the dwarf pine (a mere bush) being considered the most suitable. The variety of climates and exposures which the elevated ground of these islands presents serves to diversify, to an infinite degree, the qualities of the wines obtained; but the vinification seems to be more or less imperfect. *Monthymet* is a very fair mild quality. The "Nectar" of *Morta* is somewhat bitter and astringent. *St. Elie* and *Calliste* are white, and known as the *Wines of Night.* The *Verdea* of Zante, also a white wine, possesses the flavour of Madeira.

The best known kinds are those of Candia, Cyprus, Lesbos, Malmesyne, Malmsey, Mount Hymet, Naxos, St. Elie, Scio, Tenedos, Thera (Santorin), Visanto, and Zante.

A new industry has sprung up in Greece of late years, viz., the making of wine from the dried fruit by a process of maceration; raisins and currants were largely shipped to Marseilles for that purpose, where they pay a duty of 25 fr. per 100 kilos. Wine so made abroad was until lately only subject to 70c. per hectolitre. Now, as 100 kilos. represent about 3 hectolitres of wine of 10 degrees, it results that 100 kilos of dried fruit paying 25 fr. in reality only pay 21 fr. as wine. In France wine so made cost about 75 fr. for 3 hectolitres, and to the foreign producer only 68 fr., leaving a margin of 7 fr. in favour of the latter. This induced many houses both in Greece and elsewhere to embark in the enterprise. Unfortunately France has raised her tariff. An attempt was made to induce the Grecian Government to modify its law in regard to dried fruit reserved for the distilleries, which it is calculated only absorb 8,000 tons, whereas it was stated there were 18,000 to 20,000 in store. The measure, however, met with opposition, from the fear that it would act prejudicially to the export of natural wines. The making of wine in France from dried fruit was

only an expedient, but it now seems to have taken some hold in the country. The process it undergoes renders this wine a poorer quality, requiring to be rectified in various ways.

Green Corn.—See *Canned Corn.*

Green Fruits, Vegetables, etc.—*Green Fruits* comprise almonds, apples, apricots, bananas, chestnuts, dates, "forbidden"-fruits, grapes, lemons, melons, nuts, onions, oranges, pears, peaches, pineapples, plums, pomegranates, pomeloes, shaddocks, tomatoes, walnuts, etc., all of which are referred to under their own headings, while rhubarb, gooseberries, strawberries, raspberries, red, black, and white currants, etc. are classified as *Soft Fruits.*

Formerly most of these fruits arrived in our markets in somewhat regular sequence, but railways, steamboats, telegrams, cablegrams, and telephones have completely revolutionised this trade, and having now the gardens of the whole world opened to us, the fruits and vegetables of not only Europe, but also of the tropics and the antipodes are, with the aid of ice, arriving from somewhere all the year round.

Fresh fruits, such as apples, peaches, apricots, etc., come by steamer from South Africa to London, and are usually offered on the markets within twenty-one days of being picked in the Cape orchards. In January cauliflowers have long arrived from Italy, but they are hard, too sweet, and only of poor quality. Other vegetables and fruits are now coming from there in large well-ventilated carriages specially constructed by the Belgian State Railway Administration, and reach London by direct through service *viâ* Chiasso, Bale, Brussels, Ostend, and Tilbury. Finer cauliflowers soon arrive from Brittany and Anjou, where this vegetable is cultivated on a large scale. Artichokes come from Angers, Brest, Bouches du Rhone, and Laon. The earliest asparagus makes its appearance in March from Tours, Angers, Orleans, and Avignon. First potatoes come in January and February from Canary, then in March and April from Algeria and Malta, the next from Italy, and afterwards from Jersey and South of France; German Reds in October. The greater part of the "*Primeurs*," or French early vegetables, salads, and fruits are forwarded by merchants who make it their special business to collect and pack them and pay the Customs duties in Paris.

A very important matter in ordering fruit from the grower or wholesaler is to have it clearly settled in what kind of packages it is to be delivered.

The principal fruit and vegetable-growing counties in England are Bedford, Cambridge, Chester, Cornwall, Devon, Essex, Gloucester, Hants, Hereford, Herts, Kent, Lincoln, Middlesex, Norfolk, Northampton, Salop, Somerset, Suffolk, Surrey, Sussex, and Worcester. The fruit-growing centres in the south are Broxbourne, Sawbridgeworth, Swanley, Brighton, and Worthing. Large quantities also come from Guernsey and Jersey, especially "English tomatoes" in 12lb. baskets (the baskets being all made in France). Probably no other products fluctuate in value so much as fresh fruits. They must always be rushed into the markets when ripe, and nothing rises or falls more rapidly. Twelve hours of "glut" usually means a dead loss to growers, the prices realised often being insufficient to pay railway carriage and "handling."

But a more serious matter to "senders" is the loose and dishonest way sale returns are made out by many commission salesmen. Excessive and fictitious charges for carting, warehousing, porterage, and other incidentals are sadly frequent in some quarters, and the "prices" returned are often wilfully understated, and not infrequently goods are disposed of to the salesman's friends at half market value.

The only check the consigner seems to have is to divide his fruit into two or three lots and note the prices each salesman returns.

The lack of rules regarding uniformity in weights or measures for

fruits is another undoubted drawback to legitimate business in the wholesale fruit trade. "*Reputed*" weights and measures should be abolished and standards enforced.

Much depends on how fresh fruits are packed; as a rule they should be packed stalks upward. The good and the inferior should never be mixed, but each quality graded and packed separately and honestly, not the best on top and inferior below. Potatoes are usually sorted, why not fruits? The fruit should only be gathered when perfectly dry, should not be bruised by careless handling, nor the stalks broken off. The softer fruits are often spoilt in transit either through over-ripeness or loose packing; the shaking to or fro soon bruises and renders them almost unsaleable. The packages as well as the packing should also be perfectly dry. The sides of the baskets should be lined with clean paper, called "fruit paper," costing 1/6 to 3/- per ream for whitey-brown, and about 3/6 for blue paper. It should stand over the sides sufficiently for folding over the fruit. To protect the fruit from the weight of other baskets and hold it firm some clean straw, long grass, pea-haulm, coarse hay, or wood-wool should be placed over the paper and the whole secured by two sticks—a hazel about as thick as the thumb, split lengthwise, pointed at the ends, and stuck into the upper rounds of the basket. Small boxes are, however, to be preferred before baskets. Fresh grapes should be packed in long shallow boxes with a couple of strong wires stretched lengthways on which to suspend the bunches without rubbing off the bloom.

Strawberries, raspberries, gooseberries, cherries, etc., and other soft fruits for the retail trade are best packed in punnets, and these then fitted into cases made to hold a certain number, but for factory and boiling purposes they are usually packed in 12lb. baskets.

Dessert apples, pears, tomatoes, etc., may be most conveniently packed in a similar manner as grapes. Peaches, apricots, nectarines, and best plums should each be wrapped in soft tissue paper and arranged in single layers with cotton wool, so as not to crush into each other; also in small strong boxes that will not bend.

Cucumbers travel best wrapped in tissue paper and stood upright in deep boxes, instead of being laid flat and piled on top of each other.

The best storage for fruits is a building with double walls, doors, and windows, with a thatched roof ceiled with boards and lined on the top with roofing felt to keep it air-tight, sunk into the ground about 3 feet, with the excavated earth piled against the walls outside to near the edge of the roof, so as to keep frost and outer heat away, and preserve the inner temperature at 35 to 50° Fahr. all the year round without fire.

Apples are handiest stored in flat open bushel boxes, which may be piled on top of each other to economise space.

Cold weather generally comes so suddenly that few are prepared for it. Every year shopkeepers lose thousands of pounds' worth of goods because their cellars and storehouses are not frostproof. They intended, of course, to have everything fixed and put in proper order, but the frost caught them unawares, and their goods were spoiled on account of their procrastination. It is better to put up your storm windows and get your heating apparatus in good shape. There are cellar doors that need repairing; air-holes in the partitions that should be stopped up; exposed walls that should be banked up with straw. All grocers and general fruiterers know these things very well, but they put off day to day what should be done at once, and the sudden and unexpected coming of a cold snap catches them.

Canned goods, vegetables, fruits—in fact, groceries of various kinds, are ruined in quality and flavour by freezing; some are utterly spoiled, and become a total loss. All of this might be avoided by a little precaution and care.

Business may be brisk, but there is plenty of time to look your premises carefully over and see if everything is all right. It will not require a great amount of labour or expense to make everything snug and tight and ready to fight the frost. Attend to this matter early, and it may save you much money.

Experiments are now being made in preserving fresh fruits in borax. It has been found perfectly successful with cherries, and is also being tried with vegetables. It appears that the borax, though costly, can be used over and over again, so that economy is to be secured in a double fashion.

English fruit raising is not likely to develop much, because of climate, land tenure, and uncertainty of crops; but there are few trades in which better profits can be made than in fruits when properly handled. Wholesalers often secure 20 to 40 per cent., and retailers would do much better to buy fresh goods under the hammer in the first market—such as Covent Garden and other centres—instead of stale stuff at private warehouses.

Retailers of fruits, vegetables, and flowers will also do well to see the show stands, trays, dishes, and arches cleverly designed, and supplied at all prices, by Parnall & Sons, Narrow Wine Street, Bristol. A good display is one of the chief factors for success.

Special Fruit Firms.—M. & W. Jones, Villa Nova de Gaya, Portugal; Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool; Draper & Son, Covent Garden.

Subjoined is a list of the chief market days for fresh fruits, vegetables, etc., in the leading centres, also of the weights, measures, and packages employed. The foreign packages are, of course, the same in all towns.

Aberdeen.—Tuesdays and Fridays.

Birmingham (Smithfield).—Wednesdays and Saturdays.

Apples, cherries, currants, and gooseberries are sold in packages of 63lbs.; damsons, green walnuts, pears, plums, etc., per 72lbs.; other ripe fruits, in sieves, etc., per 12lbs.; parsley, spinach, turnip tops, etc., per 20lbs.; artichokes, beets, and potatoes, per 80lbs.; peas, beans, and sprouts, per 40lbs.; carrots, parsnips, and turnips, per 56lbs.

Cardiff. — Tuesdays, Thursdays, Fridays, and Saturdays.

Edinburgh and Leith.—Tuesdays, Thursdays, and Saturdays.

Glasgow. — Tuesdays, Wednesdays, Thursdays, and Fridays.

Fruit and Vegetables are not sold by measure in Glasgow and the West of Scotland, and Imperial measures are used only rarely by retailers. Everything goes by weight. The old-fashioned sleek, or West of Scotland bushel, is used, but it is represented by a fixed weight; thus a sleek of apples is 40lbs., pears 50lbs., and plums 60lbs. Generally sales are at per cwt. or per package.

Gloucester.—Mondays and Wednesdays.

Hull is the central market for fruit, plants, and flowers on the East Coast. Sale days, Mondays and Thursdays.

The following are the ordinary packages:—Belgian apples in barrels of 60 kilos; Belgian cherries per molly 10lbs., large molly 15lbs.; French apricots per pad; German bilberries in chip baskets of 4 kilos; German *cherries* per half sieve of 8 kilos; German apples in barrels of 50 kilos; Dutch black currants. per basket of 7 kilos; Dutch red currants per basket of 6 kilos; Dutch pears per half mud of 15 kilos; Dutch cherries per basket of 6 kilos; Spanish tomatoes in 8lb. boxes.

Leicester.—Wednesdays, Fridays, and Saturdays.

Liverpool.—Market Days, Cazneau Street and Queen's Square: Tuesdays, Wednesdays, Thursdays, and Saturdays.

Cherries.—English: Half bushel, 24lbs. net; half pot, 32lbs. net; pot, 63lbs. net. French: Pads. 14/16lbs. net; sieves, 14/16lbs. net. German: Baskets, 15/18lbs. net.

Plums, Damsons, Greengages, etc.—English: Half bushels, 28lbs. net; half pots, 36lbs. net; pots 72lbs. French: Pads, 14/18lbs. net; boxes,

6, 9, or 12lbs. net; sieves, 14/18lbs. net. German: Baskets, 17/18lbs. net; large baskets, 36/40lbs. net.

Red and Black Currants.—English: Half bushel, 24lbs. net; half pots, 32lbs. net; pots, 63lbs. net. French: Flat handle baskets, 7/9lbs. net.

Apples, Pears, etc.—English: Pot of 64/72lbs. net. French pears in boxes of 15, 30, 36, 48, 60, 70 pears per box. French pears in long cases (coffins), say 64lbs. net. French apples in cases of about 40lbs. net. Belgian pears in boxes of about 36lbs. net. Belgian pears in mollies of about 16lbs. net. German pears in mollies of about 32/36lbs. net.

Gooseberries.—English: Half bushel, 28lbs.

Strawberries.—Gallon baskets, 6lbs. net; pick baskets, 12lbs. net; sieves, 12/15lbs. net.

Green Peas and Beans, English, hampers of 40lbs. net.

Broccoli, Cornish, crates of 4 to 6 dozen.

Lettuce, French, in flats containing 3 to 3½ dozen.

English Marrows, Beets, Horse-radish, Cucumbers, Cabbage, Carrots, Turnips, and also various Herbs are sold per dozen.

London.—Markets every week day. Covent Garden for fruits and flowers; and for vegetables, Farringdon, Borough, and Spitalfields.

The ordinary packages are:—

Apples.—Kitchen and dessert in sieves, choice dessert in halves.

Pears.—Choice in halves, common in sieves.

Plums.—Damsons in halves, gages in pecks and halves; plums in halves.

Cherries, Gooseberries, and *Currants* in halves, containing 24lbs.

Raspberries, without stalks, "slipped" or "plummed," in tubs 30lbs. and 50lbs. each.

Strawberries in gallons and pecks; choice in ½lb. and 1lb. punnets.

Dessert Gooseberries, ripe, in 1lb. punnets and gallons.

Choice Pears in boxes of 2 dozen.

Raspberries, with stalks, for dessert, 1lb. punnets.

Cob-nuts in sieves of 50lbs.

Potatoes.—*New*: 1 cwt. bags, or sieves of 8 gallons; *Old*: In 1 cwt. (2 bushels), or at per ton.

Greens.—Brussels sprouts in half sieves. Headed cabbages, 60 to a tally, in pads and crates; cauliflowers, in bunches of 12, collards in bunches of 12, at per dozen bunches.

Onions.—Per 1 cwt. bags.

Parsnips.—Bunched, or per ton.

Carrots.—Bunched, or per ton.

Turnips.—Early, in bunches; late, in 1 cwt. bags.

Celery.—Per doz. heads.

The markets for vegetables of all kinds vary from season to season, and the leading kinds only are quoted in the reports.

Fruit Punnets.—½lb., 1lb., and 4lbs.

Sea-kale Punnets. — Eight inches diameter at the top and seven and a half inches at the bottom, and 2 inches deep.

Radish Punnets.—Eight inches diameter, and one inch deep, if to hold six hands; or nine inches by one inch for twelve hands.

Mushroom Punnets.—Seven inches by one inch.

Salading Punnets.—Five inches by two inches.

Half Sieve.—Contains 4 imperial gallons. It averages 12½ inches in diameter and 6 inches in depth.

Sieve.—Contains 8 gallons. Diameter 15 inches, depth 8 inches. A sieve of currants, 20 quarts.

Bushel Sieve.—Ten and a half imperial gallons. Diameter at top 17¾ inches, at bottom 17 inches; depth 11¼ inches.

Bushel Basket.—Ought, when heaped, to contain an imperial bushel. Diameter at bottom 10 inches, at top 14½ inches; depth 17 inches. Walnuts, nuts, apples, and potatoes are sold by this measure. A bushel of the last named, cleaned, weighs 56lbs., but 4lbs. additional are allowed if they are not washed. A *junk* contains two-thirds of a bushel.

A *Pot* contains 2 bushels.

Fruit Peck contains 12lbs.

Pottle.—Is a long tapering basket made of deal shavings, and holds rather

over 1½ pints. A pottle of strawberries should hold ½ gallon, but never holds more than 1 quart; a pottle of mushrooms should weigh 1lb., but pottles seem to have gone out of fashion lately.

Hand.—Applies to a bunch of radishes, which contains from 12 to 30 or more, according to season.

Bundle.—Contains 6 to 20 heads of broccoli, celery, etc.; seakale, 12 to 18 heads; rhubarb, 20 to 30 stems, according to size; and of asparagus, from 100 to 125.

Bunch.—Is applied to herbs, etc., and varies much in size, according to the season. A bunch of turnips is 12 to 25; of carrots, 15 to 40; of greens, as many as can be tied together by the roots.

Grapes.—Are put up in 2lb. and 4lb. punnets; new potatoes, by the London growers in 2lb. punnets. Apples and pears are put up in bushels, sieves, or half sieves. A hundredweight of Kentish filberts is 100lbs. Weights are always 16 ozs. to the pound.

Manchester. — Smithfield Market (Shude Hill) is the important centre, no other market in the kingdom, save London, receives and distributes such a vast amount of fresh fruit and vegetables. *Tuesday* is the biggest day, and then come Thursday and Saturday.

Nottingham. — Tuesdays, Wednesdays, and Fridays.

Apples are sold by the cwt., and by the strike of 64lbs.

Pears by the cwt., and by the strike of 72lbs.

Plums and *Damsons* by the pot of 72lbs.

Tomatoes by the lb.

Strawberries by the peck of 12lbs.

Red and Black Currants by the stone of 14lbs.

Gooseberries by the peck of 16lbs.

Potatoes sold by the ton, and to small buyers by the strike of 84lbs.

Onions, Carrots, and Broad Beans by the cwt. or ton.

Runner Beans by the pot of 40lbs., or bushel of 32lbs.

Brussels Sprouts, on the stalks, in bundles of 12.

Brussels Sprouts, off the stalks, by the stone of 14lbs.

Sheffield. — Tuesdays, Thursdays, Fridays, and Saturdays.

Potatoes.—Half load bags, containing 9 stones, or 1 cwt. 1 quarter. Two bags to one load.

Onions, Parsnips, Carrots, Beet, and other Cereals.—Sold in bags of ½ cwt. or 1 cwt. each.

Kidney Beans.—Per bushel of 32lbs. each.

Peas.—Per bag of 40lbs., also per bag of 80lbs. each.

Apples, Pears, Plums, Gooseberries, and other Fruits in Bulk.—In all kinds of packages, whether in sieves, ovals, pots, London or Kent baskets or barrels, at per cwt. of 112lbs.

Raspberries.—At per quart or cwt.

Strawberries.—At per peck or per lb.

Cabbages, Cauliflowers, Savoys, and Others.—At per dozen.

Nearly everything in Sheffield is sold by weight and count. Buyers usually wish to see everything they buy weighed or counted before they leave. Very little is sold at per package. Kent strawberries, Worcestershire radishes, Cornish broccoli are among the exceptions.

Foreign Fruits.—Are sold at per case, barrel, or bag. Particulars are given of contents, or about, as far as is known, or as advised by the sender. When goods are retailed those fruits that require counting are sold at per hundred of 120 and per dozen, and those by weight at per stone of 14lbs.

AVERAGE WEIGHTS PER PECK

Potatoes, 20 lbs.	Green peas, 8lbs.
White turnips, 16lbs.	Apples, 16lbs.
Swede turnips, 18lbs.	Pears, 18lbs.
Onions, 16lbs.	Strawberries, 12lbs.
Broad beans, 9lbs.	Gooseberries, 16lbs.
Kidney beans, 10lbs.	Plums, Damsons, and other stone fruit, 18lbs.
Scarlet runners, 8lbs.	

Digestion of Vegetables.—Many green vegetables contain large proportions of elastic, fibrous, and woody tissue, which are very indigestible; and various sorts contain starchy matter, which require thorough cooking to burst the cells of the starch to make it digestible. These cells are especially liable to be swallowed in lumps—the outside of which may be soft, but the centre hard and quite impenetrable by the digestive fluids. To prevent this, they should be crushed with a fork at the time of eating—a precaution which will enable many delicate persons to digest potatoes, carrots, and the like, who could not otherwise touch them with safety.

Value of Uncooked Fruit. — Fruit taken in the morning is as helpful to digestion as it is refreshing. The newly-awakened function finds in it an object of such light labour as will exercise, without seriously taxing its energies; and the tissues of the stomach acquire at little cost a gain of nourishment which will sustain those energies in later and more serious operations. It is an excellent plan, with this object in view, to take a little bread with the fruit eaten. Fruit is the chief article of a Dutch child's diet; and, under certain precautions, it does well. In Germany, scarcely any household omits the daily dish of baked apples, which are acknowledged by all to be most excellent and nutritious food.

Why for ages have people eaten apple sauce with their roast goose and sucking pig? Simply because the acids and peptones in the fruit assist in digesting the fats so abundant in this kind of food. For the same reason at the end of a heavy dinner we eat our cooked fruits, and when we want their digestive action even more developed we take them after dinner in their natural uncooked state as dessert. Cultivated fruits, such as apples, pears, cherries, strawberries, grapes, etc., contain on analysis very similar proportions of the same ingredients, which are about one per cent. of malic and other acids, and one per cent. of flesh-forming albuminoids, with over eighty per cent. of water.

Digestion depends upon the action of pepsin in the stomach. Fats are digested by these acids and the bile from the liver. Now, the acids and peptones in fruit peculiarly assist the acids of the stomach. Lemon juice has been prescribed largely by physicians to help weak digestion, simply because these acids exist very abundantly in the lemon.

Green Peas.— F. *Petits Pois;* G. *Grünen Erbsen;* Port. *Ervilhas;* Sp. *Guisantes;* W. *Pys gleison.*

Retailers in buying these in sealed bottles or tins will do well to obtain a guarantee as to their purity or harmlessness. It is often said that they are artificially coloured green with sulphate of copper; although, as a fact, there is never really a particle of sulphate to be found in them when washed. Sulphate is admittedly often added to the peas in sterilising and preserving them, but it then enters into an insoluble combination with the peas, and thereupon ceases to be sulphate. They are afterwards well washed. The green is not imparted to the peas by the sulphate, but is the natural colour of the peas themselves, which the sulphate merely fixes or preserves.

Petits Pois or *Gros Pois* are the French terms for "small green peas" or "large green peas," gathered quite young. Large quantities come from France, Holland, and Germany every year in wood cases of fifty 2-lb. or a hundred 1-lb tins, or 24 bottles, and of various qualities. Immense quantities are prepared near Paris, Le Mans, and Nantes. Around Nantes in abundant years some 250 tons are preserved during the season. They are usually graded as *Moyens* (medium), *Fins* (fine), *Très fins* (very fine), *Sur fins* and *Extra fins* (extra fine).

The small metal labels on the continental tins are unreliable and no guarantee that the contents are according to English law. They have never, except theoretically, been proved to be poisonous. Colouring with copper is not strictly illegal—a little mineral colouring being permitted in England, but magistrates differ as to *how much.* In France a larger amount of copper is allowed, so that the peas most beautiful in appear-

ance are possibly the most dangerous, or at all events subject the sellers in this country to fines. There is, however, now a process by which *chlorophyl*, the innocent and beautiful green which forms the natural colouring matter in the plant world, can be separated from leaves and vegetables, such as Spinach, and applied to heighten the hue of peas and other preserved vegetables, and this is supplanting the "coppering" processes.

Large quantities of canned peas have been lately coming from Denmark, where *Fairbeards Nonpareil* are held to be the finest and best.

Preserved or tinned peas may be done in same way as fruits. The rationale of the process being that putrefying germs existing on the surface of the peas are destroyed by the heat, and fresh putrefactive agencies are prevented from gaining access, by the total exclusion of fresh air.

Shell the peas, put them into dry wide-mouthed bottles, shake them down, cork the bottles closely, and seal the corks air tight. Bury the bottles in the driest part of the garden, and take them up as wanted. They will keep good five or six months.

Another way.—Choose peas which are large and fully grown, though not old. Put them into bottles, cork securely, and tie with bladder. Tie a whisp of hay round the lower part of the bottles to prevent their knocking against each other in the pan. Put them side by side in a large pan, and pour into it as much cold water as will reach to their necks. Put the pan on the fire, and let it remain for two hours after the water has reached the boiling point, then take it off, but do not remove the bottles till the water is cold. Seal the corks, and store in a dark, dry place.

Vast quantities are now canned in Italy and America, especially in Jersey and Brooklyn, the peas being shelled by machinery. One man, two boys, and a machine can shell about 1,800 bushels in a ten hours' day.

Peas when preserved in tins, hermetically sealed, are also said to be liable to undergo some very peculiar decomposition and become poisonous; it is fancied that a poison is developed from some change in the *legumin* analogous to the formation of the cadaveric alkaloids. Foreign packed peas, besides being generally treated with copper, which is sometimes effected by boiling the peas in copper vessels, and sometimes by plunging them for five or ten minutes in a boiling solution of sulphate of copper, have occasionally been supposed to contain other poisonous substances, such as tin and lead or zinc. The copper salts used are, however, almost too small to exert any toxic or injurious action.

Sulphate of copper itself, which is a soluble salt, may be taken in a pure state in quantities 10, 20, or 30 times larger than ever used in peas without doing the slightest apparent harm. Doctors, in fact, used to prescribe it in larger doses, and it has been taken by patients for months and years. Yet, although no fatal cases have been proved other doctors argue that small doses of these copper salts induce a variety of gastric and intestinal troubles, which are liable to be put down to all sorts of causes other than the true one.

For more than 40 years this sulphate of copper has been used in minute quantities by the French packers for the purpose of fixing or retaining the natural colour of peas and other vegetables. During these 40 years hundreds of millions of tins and bottles of these foods have been eaten, but never has there been a single well-authenticated instance of poisoning or other injury that could be definitely traced to the minute proportion of copper used in the process. While not believing in half the scare-head statements and sensational press paragraphs, everyone is bound to regard the law.

There are at least over 20 million tins of them consumed annually.

Doctors Paul, Stephenson, Luff, and Quain all aver that such peas are quite innocuous, and the writings of Guy, Ferrier, Dicksonhiam, Phillips, and others, assert the same. Green peas are best when heated or boiled for about 20 minutes in the tin, after a vent-hole has been made.

How Copper is detected.—A weighed

quantity is made into a paste with water and a little hydric chloride, and then placed in a platinum dish. A rod of zinc, on being pushed into the paste so as to touch the dish, sets up a galvanic current, and at the end of several hours all the copper is deposited as a coherent film, and may be dried and weighed. A neater process is the connection of the platinum dish with the negative pole of a battery, while the positive pole is suspended in the acid paste. The peas must, of course, be burnt to an ash before the exact amount of copper can be estimated.

Carbonate of soda is commonly added to green peas in cooking them, to improve the colour.

The surplus liquor should be drained off, and the peas should be served while piping hot. The addition of a few fresh mint leaves and a little sugar is an improvement.

As with all tinned foods, rusty tins should always be rejected.

Leading Merchants.—Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool; J. A. Sharwood & Co., Ltd., St. George's House, London, E.C. (the largest dealers in the world).

Green Soap or German Soft Soap (sometimes called "Green Salve").—An official preparation of soft soap made from potash and linseed or hempseed oil, coloured with indigo and used in the treatment of eczema and other cutaneous diseases.

Green Teas. — Chinese, *Luh cha* (green tea); Lat., *Thea viridis*, as distinguished from *Thea bohea* (black tea). (See also *Teas, Blended Teas*, etc.)

The finest green teas are prepared in China, and consist of the young unopened leaf-buds of the tea plant, and are known best in England as Hyson, Hyson Skin, Young Hyson, Gunpowder, Imperial, and Tonkay or Twankay, according to the way the grower rolls the green leaf.

These are dried by a quicker process and at a higher temperature than black teas, and therefore contain less moisture. The colour is or should be entirely due to the rapid drying of the fresh gathered leaves, which prevents the chlorophyl, or natural green colour, undergoing much alteration.

In curing the leaves they are worked up into little rolls by hand and roasted in dirty copper pans over a wood fire within an hour or two of being gathered, usually in the afternoon, while the leaves for *black* tea are allowed to lie in heaps for ten or twelve hours, during which time they undergo a sort of fermentation and are dried very slowly. In China the brighter green leaves of the hardiest plants are usually selected for making into the best green teas.

But it is said that the green tea sent out of China for the foreigner is almost invariably "faced," dyed, or glazed with artificial colouring matter, usually a powdered mixture of gypsum and Prussian blue. Sometimes they owe much of their colour to being mixed with weeds, shrubs, and grasses.

Green teas are prepared very extensively in both China, Japan, and Ceylon, and the natives of Russian Central Asia drink none but these; although the demand in Europe has greatly fallen away these last dozen years. There is also a great fancy for green teas in Canada and the United States. The Ceylon growths seem to be displacing all others.

Some is now made in India, and in the North-West Provinces the leaves (gathered dry) are at once sweated and softened by heat, then rolled and exposed in the sun till they turn a darkish colour, and rolled again. When sufficiently rolled, they are all heated till too hot to be stirred by hand.

The tea is next tightly packed in a strong canvas bag and beaten so as to consolidate it, and then left for a few hours.

It is finally "fired," or dried off in a pan for about nine hours—beginning with a high heat, which is gradually reduced—while it is also being well stirred and tossed about the whole time. If kept in the original packages for a great length of time, green teas become what is called "boxy."

Indian green tea is never "faced," or artificially coloured, with foreign substances. It yields a light-coloured

liquor of high fragrance, but thin, sharp, and somewhat rasping in taste compared with *black* tea. The Indian product, however, is inferior to the best Chinese green tea, and only fetches about half the price. The Russians seldom use any other; they are partial also to a squeeze of a lemon in their tea, instead of milk or sugar.

The different processes employed in the manufacture of green tea seem to develop a much larger percentage of the narcotic principle than is the case with ordinary black tea.

A cup of strong green tea, without milk or sugar, is a popular and generally efficient remedy for a severe nervous headache. It has a rather serious effect upon the nervous system and the digestive organs if frequently taken strong; producing with some people tremblings, giddiness, and headaches; and tried on small animals, has even caused paralysis.

(For green brick tea, see *Brick Tea.*)

Green Turtle.—See *Turtle Meat.*

Green Wines.—A technical name for wines during the first year after making.

Greengages.—F. *Reine Claude;* It. *Regina Claudio.*

A moderate-sized species of the *Prunus domestica,* but the most esteemed of all. It was first brought to England by a member of the Gage family from the monastery of Chartreuse — hence its name. This family obtained from the monks of Chartreuse, in Paris, a collection of fruit trees. Among others was one named "*La Reine Claude,*" but the name having got rubbed off, Lord Gage's gardener was at a loss to know what it was. When the tree bore fruit he was surprised to find that its green state did not change as other plums do, so he gave it the name of "Green Gage."

In preserving greengages—either as bottled fruit, as jam, or as crystallised fruit—their appearance may be much improved by adding a little soda or potash to the water in which you commence to boil them, otherwise they will assume a yellowish cast.

The green colour of fruits and leaves depends on the amount of alkali they contain; and in proportion as acid or alkali prevails in them, so they are colcured from red to violet, blue, and green. Every cook knows how soda, potash, or muriate of soda (common salt) gives a fresh green appearance to her greens or cabbages in boiling.

The best kinds for jam-making are the English growths. They should be full-grown, but still hard, and not nearly ripe. Each fruit should be pricked to the stone in several places with a fork, so as to cook readily and admit sugar. As soon as pricked they should be thrown into cold water, or the colour will be spoilt by the prongs of the fork. They should afterwards be boiled very slowly, and well stirred during the process.

Some manufacturers add a little sulphate of copper or other copper compound to preserve or intensify the green colour; but these, although not positively injurious in minute quantities, should be avoided.

Gregory's Powder.—The first is the original formula of Dr. Gregory, of Edinburgh:—

2½ ozs. magnesia, 1 oz. powdered Turkey rhubarb, and ½ oz. powdered ginger.

2. The *British Pharmacopœia* (1898) requires: Rhubarb powder 22·2 per cent., magnesium oxide 66·7, powdered ginger 11·1 per cent.

3. That of the Edinburgh and Dublin pharmacopœias:—2 ozs. rhubarb, 6 ozs. magnesia, and 1 oz. ginger.

4. A form commonly made up by druggists for special uses in hospitals, etc.:—Magnesia 10 parts, rhubarb 5, ginger 3.

The powders are popular ant-acids, stomachics, and mild purgatives, used for colic, diarrhœa, and dyspepsia. Dose: 20 to 60 grains.

Retailers should be careful that these powders are not prepared with ordinary carbonate of magnesia instead of the legal *oxide.*

Gardner's patent "Rapid" sifter and mixer freely used for above. Prices from 50/- to £100. Catalogues from

Wm. Gardner & Sons, engineers, Gloucester.

Griddle Cakes, or Crumpets.—Thin cakes (also called girdle cakes) made of pancake batter, thinned down with milk and sweetened with sugar, and cooked over the fire on a broad disc or grated utensil (of tin) for cooking fish. ("Griddle" is the Scotch word for "gridiron.") Or the batter may be dropped on a greased girdle or muffin stone, run out to the size of a small cheese plate, baked to a nice brown, and then turned. (See also *Pikelets.*)

Griskins.—See *Pork.*

Grist. — Wheat-flour or meal from which the coarse bran only has been taken. In America "grist" is a name applied to the corn taken to a mill by a customer to be ground.

Grits.—See *Groats.*

Groaning Cheese.—A name given to the cheese forming part of the *blythemeat*, or entertainment provided at the birth and christening of a child. In *Pop. Antiq.*, 1777, p. 403, we read:—"It is customary at Oxford to cut what in the North is called the 'groaning cheese' in the middle when the child is born, and so by degrees form with it a large kind of ring, through which the child is passed on the christening day."

Groatine. — This consists of oats which have been freed from their husks, and then simply crushed or flattened out to about the size and thickness of a sixpence between a pair of rollers.

Groats, or Grits. — F. *Gruau d'avoine;* Lat. *Avena decorticata;* W. *Rhynion.*—(See also *Embden Groats.*)

These are the seeds or kernels of oats which have merely been deprived of their exterior integuments or husk.

This decortication is generally done in mills, some of which also cut the grain into two or three pieces, while some leave the grain in its proper form. They are used chiefly for making gruel and for thickening broths, soups, etc. White groats require more care in milling than brown or black oats. A boll of 6 bushels, say 45lbs. to the bushel, produces about 165lbs. of finished white groats, 18lbs. of groat dust (see *Sowans*), 14lbs. of grey dust, and 42lbs. of seeds.

Leading Manufacturers. — Keen, Robinson & Co. (Robinson's Patent Groats), Garlick Hill, London, E.C.

Grog (Spirit and Water). — See *Spirits.*

Ground-Nut Oil. — See *Arachis Oil.*

Ground Nuts, Pea Nuts, or Gouba Nuts.— F. *Arachides;* G. *Erdnusse;* It. *Arachidi;* Sp. *Arachide, Mani.*—(Known also as *Arachide* or *Arachis Nuts, Bambarra Nuts, Manilla Nuts, Jur Nuts, Earth Nuts, Pindas* or *Pindal, Basket Nuts, Mandubin Nuts, Monkey Nuts, Mpinta,* or *Ginguba,* etc., and often erroneously called *Castor-oil Nuts* and *Pistachio Nuts.* These nuts, which have a great number of names, are the produce of a species of the leguminous plant, *Arachis hypogæa,* of the pulse family, and perhaps *Arachis Nuts* is the most comprehensive title. They were first introduced in 1840, are unknown in a wild state, and whether native of Brazil or Africa is uncertain, but they are now cultivated in most of the tropical and semi-tropical climates, particularly in the Southern States of America, in Africa, India, Senegal, Pondicherry, and Karikal; also in China, and have become an important article of commerce especially in India, whence some 100,000 tons are exported yearly, besides a large quantity of oil (see "*Arachis Oil*"), while in China they are invariably to be found on every roadside stall throughout the country.

Ground nuts, indeed, form one of the principal exports of the eastern districts of the Madras Presidency. Mandubin, Mpinta, or Ginguba nuts are African names for these nuts.

The plant, a sort of trailing vine, resembling clover, is an annual, and grows readily on poor soil to the height of 1 or 2 feet. The seeds are planted or dibbled in October or November.

It has a branching stem 9 to 18 inches high, with hairy pinnate leaves, having four broad blunt leaflets in pairs. The flower is yellow, and produced singly in the axils of the leaves. The stalks grow longer, and after flowering turn their heads towards the ground and work themselves into the earth, where the pods grow and ripen. The first crop of seeds for eating green is ready in April, but are not ripe for export as oil yielders till July or August. When the nuts are ripe the plant dies, and has to be pulled out of the earth by hand, hence the name Earth or Ground nuts. After being picked up the pods are dried and cleaned in a winnowing machine, sometimes bleached with sulphur or *decorticated*, and then bagged for export. The pod, about ¾ of an inch long and contracted in the middle, is rough, brittle, and of a pale yellow colour. When crushed between the finger and thumb each pod is found to contain two or three seeds or kernels similar to those of hazel nuts, of a sweet aromatic flavour (especially if roasted), containing about twenty-four per cent. of flesh-forming elements. These nuts belong to the richest of all known sorts, analysis having shown them to consist of as much as 48 to 50 per cent. of crude fat. The hulls or shells have only a manurial value, but *Pea-nut Hay* is a nutritious food for cattle, and a very suitable substitute for clover hay. Two kinds of nuts are cultivated, the white and the red; the latter ripen better, because earlier. Large quantities are raised in Tennessee, Virginia, and North Carolina, and the annual crop of the United States alone is estimated at about 3,000,000 bushels. In Spain the nuts are often ground up and mixed with chocolate. They are said to be a good remedy for insomnia and indigestion, and are used in America for making a imitation chocolate. For this purpos they are beaten up in a mortar and th mass compressed into cakes, when it is said to form a very agreeable chocolate without a particle of true cocoa. *Pea-nut Candy* is another popular American confection. The Americans also use the seeds as a dessert sweetmeat by parching them and beating them up with sugar. They are sometimes sold ready roasted. A powder is also prepared from them. (See *Earth Nut Meal* and *Pea-nut Biscuits*.) There are several factories in Ohio and Indiana.

Gouba Nuts, or "*Goubers*," are a variety native of Tennessee. Their distinguishing feature is their shape, and one shell frequently contains half-a-dozen kernels. These are the most productive variety, but least palatable and most indigestible, being usually full of grit, unsound, imperfect, and are mostly sold at fairs, in circus tents, etc.

Bambarra Nuts (*Voandzeia subterranea*) are also called Ground Nuts, but they are a different and smaller species, grown largely in Zanzibar, and only contain a single seed in each pod. They are used as food only and not for oil pressing.

Besides the above, there are the Virginia, running and bunch; the Georgia, white and red; the small North Carolina, and the Spanish.

The Virginia varieties, being most widely known and popular with the trade, are the ones commonly planted. There is little difference between the Virginia and Tennessee nuts, both being sold as "Virginia hand-picked" pea-nuts.

The Spanish nut has a small kernel of fine quality, and is in demand as "confectioners' stock," being worth several cents per pound more than any other shelled stock.

While an open, sandy soil which does not stain the shell is the ideal one for the pea-nut, it thrives on any friable soil that contains a sufficient quantity of lime and humus. The presence of lime is necessary for the development of the nuts, as without lime there may be luxuriant vines bearing nothing but pods.

Pea-nut oil is used for lubricating and soap-making, and is a good substitute for olive oil for salads and other culinary purposes, and as a substitute for lard, cottolene and butter in cooking. The residue from oil-making, known as "pea-nut cake," is a highly-valued cattle food in the countries of Europe, and is also ground into fine flour and used as human food.

Virginian pea-nuts are much sought after by dealers, and when well harvested are the most handsome in appearance, the shell being nearly pure white. They are cultivated in rows, like potatoes, and are liable to be discoloured by rain at harvest time. Their appearance being thus injured, they have to be marketed cheap, as "off colour." These discoloured nuts are often subjected to a bleaching process in chloride of lime, and made white as the best; but they are apt to emit a bad flavour when roasted, and are not so salable. During the last few years immense quantities of these nuts have been imported, and appear to keep well; but having thin shells should not be much exposed to the sun.

The best come from Senegal, and the lower grades from Madras, Pondicherry, and Cuddalore. The nuts from America and West Africa arrive usually in the shell, packed in bales of 150lbs. each, but in East Africa and India they are often threshed out by machinery, and the kernels only exported. Deprived of their shell, these nuts represent pretty closely the kernels of ordinary filberts, and are indeed often mistaken for such. Blanched and prepared, they often pass in cakes and confectionery as sweet almonds, especially when ground; their cost being but one-fourth that of genuine sweet almonds. (See also *Pea-nuts.*)

Approximate prices: Undecorticated, 7/6 per cwt.; decorticated, 11/- per cwt.

Special Merchant.—M. E. Holdsworth, 3 Norfolk Street, Bradford.

Ground Rice. — (See also *Rice Flour.*)—Generally made from broken rice, the grains of which are often badly broken by the machines during the husking process.

Gruau. — The French name for decorticated grain, such as pearled wheat, barley, or groats, for soups, gruels, etc.

Gruau de Bretagne is a crude preparation, and much the same thing as our Scotch barley, but is very popular in both Brittany and Normandy.

Gruau de Paris is a more refined product, obtained by passing the dried and hardened grain—wheat, barley, or oats—between mill-stones set wide enough to remove the outer skin without breaking the grain itself.

Semoule de Gruau is a name for semolina or decorticated wheat when crushed or cut into hard granules, and these when sifted into three or four sizes are known as *Farines de Gruau*, firsts, seconds, thirds, small, etc.

The name *Pain de Gruau* is given to a fine kind of white bread made in France, and particularly popular in Paris. It is made from the coarser or larger kinds of semolina.

Gruyere Cheese.—F. *Fromage de Gruyère;* G. *Schweizer Käse;* It. *Griviere;* Port. *Queijo de Suissa;* Sp. *Queso Suisso.*

A popular kind made from skimmed or partially-skimmed cows' milk in the Jura regions of both Switzerland and France, and also in several parts of the Vosges Mountains.

Gruyère cheese is an intermediate between the hard and soft cheeses, but is quite firm and dry, and of a pale yellowish colour. It is notably traversed by numerous cavities, air bubbles, or cells and passages, and is one of the kinds most often used in cooking macaroni and certain other Continental dishes.

The original, and perhaps the best, is the Swiss, and took its name from Gruyère, a small town and valley in the Canton of Fribourg, Switzerland, where the cheese is made from a mixture of goats' and ewes' milk. Ordinary weight about 1½ cwts. each. Composition:—Water, 34·68; casein and albumen, 31·41; fat, 28·93; milk sugar, 1·13; and ash, 3·85.

In making them, the milk is set at 82° to 86° F., the curd is first cut and then broken, and then allowed to settle for ten minutes. The curd with the whey is next heated to 140°, and this causes the curd to become tough and hard. The curd, after the whey is pressed out, is put in vats and submitted to very heavy pressure, after which it is dry clothed and put into a dampish cellar, where it is systematically salted with dry salt, also strongly flavoured with the dried and powdered herb *Melalitus officinalis*, so that when ready for consumption it is of close texture, except where the serum or

whey has collected and formed large holes.

These cavities, or air cells, are largely due to the chemical action of the whey, the sugar contained becoming, during the ripening, converted into alcohol and carbonic acid, which by its expansion, while escaping, produces the vesicular texture, so peculiar to this cheese.

The French Gruyère contains more numerous but smaller holes in it, and its production in the three departments (Jura, Doubs, and Ain) on the confines of Switzerland increases yearly, and supplies over three-quarters of the cheese made in France; but in Switzerland it remains stationary, although the industry dates back to 1636 at least.

These French factories deal with over 10 million gallons of milk yearly (say 20,000 tons of Gruyère). In fact, cheese-making and watch-making form the staple industries of the whole region. Each village has its own "*fruitier*," or co-operative manager, whose duty it is to receive the milk from the farmers, make it into cheese, and market it, each farmer in turn receiving back his proportion of the whey for pig-feeding. The factory, or "fruiterie" is parish property, and the *fruitier* is paid his salary from the same source. Irreproachable cleanliness is enforced, and the smallest speck of dirt on the milk vessels compels the fruitier to reject the milk. The cheese is made into huge grindstone-shaped blocks, about 3 feet in diameter by 6 inches thick, which are finally packed in large tierces holding 8 or 12 cheeses.

Gruyère cheese, on account of its strong and peculiar flavour, is, however, not generally liked by English people.

Further remarks as to management will be found under "*Swiss Cheese*."

Guaiac Soap and **Guaiacum Resin.**—The soap is composed of liquor potassa and guaiac.

Guayacan, or *Guaiac*, is the native name of the plant in South America.

Guaiacum resin is brittle and of greenish-brown colour, and is obtained from the stem of the guaiacum tree.

Guango Beans.—See *Rain Beans*.

Guanos.—From the Peruvian word *huano* (dung).

This valuable manure consists of the decomposed excrement, more or less fossilised, of sea fowl which congregate in prodigious swarms all along the shores and adjacent islands off the coast of Peru and Bolivia, and on other parts of the Southern Pacific coast, where the climate it hot, dry, and free from rains. In some of the islands deposits have been found 50 to 60 feet in thickness; and those on the Chincha Islands, now exhausted, were originally about 200 feet thick.

Guanos have only been imported into this country largely since 1841, in which year it was introduced by the Earl of Derby. They are of various qualities, and their values should be calculated from the amount of nitrogen, salts of ammonia, and phosphates which they contain.

Some kinds, having lost nearly all their ammonia through atmospheric exposure and decomposition, are of comparatively little value. Guanos should therefore be covered up well as soon as laid on the land, and "top-dressing" is certainly the most wasteful way in which they can be applied.

Some kinds are largely contaminated with sand, and colour is scarcely any criterion—some authorities giving the preference to the whitish varieties, which are believed to be more recent, while others prefer the red guanos.

The best are those which retain most of their original constituents, and should contain about the following percentages:—52 per cent. of organic matter and salts of ammonia, 23 of phosphates, 13 of moisture, 10 of alkaline salts, and 2 of sand—altogether equal to over 16 per cent. of ammonia.

The high state of agriculture in this country is mainly indebted to the fertilising powers of guanos, but, unfortunately, Peruvian guanos are becoming exhausted and of inferior quality, being principally phosphatic. Guano is no longer protected by a monopoly, and there is little prospect of new deposits being discovered. Of the Chilian export quality, containing under 15 per cent. of

sand, not more than 70,000 tons remain.

Fray Bentos Guano is an artificial kind prepared in the Uruguay Meat Extract Manufactory. It is in the form of a fine dry powder smelling of glue and resembling meat flour.

Australian Guano is a sort found on the Lacepede Islands, on the north-west coast of Victoria.

Another kind is known as *Fish Guano*, made from the refuse of all kinds of fish, bad fish, etc. Most of this is made in Norway and Newfoundland from the cod and herring offal; some is made in London, Hull, etc., of bad fish, which is usually dried and ground to a floury powder.

Guarana.— (Also known as *Guarana Bread*, *Sticks* or *Tea*, *Brazilian Cocoa*, etc.)—It consists of a kind of paste used as food and medicine, and is prepared from the seeds of the climbing plant *Paullinia sorbilis*, by the Guaranis and other savage tribes in the Amazon Valley of Brazil, taking its name from the former. It is first made in rolls like sausages or oblong cakes, and from which pieces are afterwards broken, and pounded in water and sweetened, when it is greatly esteemed as a valuable and refreshing beverage.

It contains 3 to 5 per cent. of the crystalline or alkaloid, called guaranine, which is similar to the *theine* of tea and the caffeine of coffee, and is used as a cure for megrims or sick headache. Guarana was introduced to special notice in this country first in 1856 and again in 1870.

Guatemala Coffees. — (See also *Coffee*.)—The export of coffee is the sole form of wealth which Guatemala possesses, and the cultivation of coffee is now absorbing the attention of almost all the landowners, although the tropical situation of the country, the proximity of every portion to the sea on both coasts, the diversity of altitudes, and consequently temperature, should combine to make its agricultural capabilities equal to any in the world.

The principal districts of the coffee-growing industry are found in the departments of Quezaltenango, San Marcos, Chimaltenango, Santa Rosa, Retalhulen, Escuintla, Zacapa, and Alta Vera Paz. The conditions essential for the growth of coffee are, in this latitude, an altitude of from 2,600 feet to 4,500 feet above the sea level, a considerable depth of vegetable soil and a clay subsoil. Lands of this description are found in almost every department of the Republic. The coffee tree is easily cultivated. The young trees are planted in little pits about fifty centims. deep, and at a distance of about 1½ metres from each other. Every three months the plantation needs thinning out, and the first harvest is obtained the third or fourth year after planting the trees.

In the lowlands of Guatemala, *Coffea liberica* is the variety which flourishes best, its harvesting being also facilitated by the fact that its rich, heavy berries, when ripe, do not drop to the ground, an important point in that country, where labour is comparatively dear, although only some 19 to 25 cents. a day for Indians.

After being cured, dried, and hulled, the beans are sorted into "firsts," "seconds," and "thirds," and then packed into Dundee or Calcutta sacks of 130 to 135lbs. nett each. These are sent on the backs of Indians or mules, or in carts drawn by oxen to the nearest railway station for a port of shipment. The "firsts," or *vera paz*, usually go to London, the "seconds" to Germany, and the "thirds" to the United States.

The chief port of shipment is Champerico, and the exports, which are increasing yearly, already amount to 50 or 60 million pounds.

Guavas.—F. *Goyave*; Port. *Guyava*; Sp. *Guyaba*.

Guava Cheese, Guava Jelly, Guava Marmalade, and Guava Wine are all preparations from the fruit of various guava shrubs or trees of the *Psidium guajava*, which grow wild in the West Indies, Central America, Madeira, and some other countries, but two or three varieties are now cultivated and naturalised in most of the tropical and sub-tropical regions. There are at least seventeen different species. They are usually propagated from the seed, and prefer rich moist ground,

The *common pear-shaped* or *white guava* tree, *P. pyriferum*, grows 10 to 20 feet high, all over Ceylon and West Indies, and resembles a cherry tree, but with larger and longer, smooth, opposite leaves, which have an aromatic taste, and are often chewed by the natives. The flowers are of pure white colour, have a very sweet and delicious scent, and are not unlike a large white myrtle blossom. One variety, good for making into jelly, is a brownish yellow, round or pear-shaped in form, about the size of a hen's egg, very smooth, sweet, and aromatic, tasting something like figs; but of an astringent nature, while most other fruits are laxative; it has a thin brittle rind, and the inside contains a firm pulp of yellow hue, like the orange, but it is mixed throughout with small tough seeds of triangular form. The fruit is so very fragrant that cutting one open will scent a large room, but most varieties have a musky, strawberry flavour which is not at first liked by persons unaccustomed to its peculiar smell and taste.

The red or apple-shaped guava, *P. pomiferum*, is of a beautiful red colour, but extremely acid. It is preferred by many for eating, but not so highly esteemed as the white or yellow for making into jelly. The *Strawberry* or *Cattley Guava*, a native of Brazil, is very popular in Florida, not only for its round fruit, but also for its small white and fragrant flowers and beautiful foliage. These guavas are of the size of a small walnut, skin of a deep claret colour, somewhat resembling, but thinner than, the skin of the fig; pulp soft, fleshy, purplish red next the skin, paler towards the middle, and quite white in the centre. They have a juicy strawberry flavour. There are also several minor varieties, such as the *Black Guava*, of Jamaica, and the *Chinese Guava*, a hardy kind with smaller claret-coloured fruit, often met with in English hothouses, and in the South of France this will fruit in the open air. Like strawberries, guavas are best when fully ripe and ready to fall off. They will not keep fresh long, and it becomes necessary, therefore, to preserve the fruit quickly, either as marmalade, jelly, etc., or to make it into wine. They are also imported in tins whole, and are then good as freshly gathered.

For *Guava Jelly*. — The fruit is gathered before quite ripe, cut up, and enough water being added to keep it from burning, it is cooked for about an hour, then strained through a thin cloth. Equal quantities of the juice and sugar are finally boiled together for twenty minutes. Sometimes a little lime or lemon juice is added to improve the flavour. The rinds are often stewed in milk, and also made into marmalade. There is no reason why guava preserves should be any more costly than English jams and jellies. The fruit in Jamaica, for instance, can be had for the picking, and the best vacuum pan sugar is of course very cheap there, while the manufacture is not half the trouble of ordinary strawberry or raspberry jam.

Guava Jelly Importers.—The Pure Cane Sugar Co. (J. Philip & Co., agents), 4 Fenchurch Buildings, London, E.C.

Guernsey Brandy.—A kind made from beetroot spirit.

Guindre. — See *Spanish Wines*.

Guinea Coffee.—The fruit of the shrub *Coffea Guinensis*, a native of Guinea, which grows on the west coast of Africa, about 18 inches high, bears quadrifid flowers, and small, violet-coloured berries, each containing two cartilaginous seeds, pointed at the ends, but quite devoid of the valuable alkaloids found in the popular varieties of coffee.

Guinea Corn. — See *Millet Seed*.

Guinea Grains. — See *Grains of Paradise*.

Guinea Pepper. — A general term for capsicums grown in New Guinea, also variously known as Cayenne Pepper, Guinea Grains, Grains of Paradise, Ethiopian Pepper, Malaguetta Pepper, Red Bird Pepper, Chillies, etc., but more correctly applied to the species *Capsicum annuum*, a sweet or tasteless *pod pepper*, as grown in Spain and Portugal.

Gum.— Du. *Gom;* Da., G., and Sw. *Gummi;* F. *Gomme;* Sp. *Goma;* Port. and It. *Gomma*.

True gums are plant exudations, or prepared vegetable substances, which dissolve or soften in cold water, forming a mucilage, or at least a liquid of a gelatinous consistency. They are insoluble in 60 per cent. alcohol. Treated with nitric acid they yield mucic and oxalic acids. Sulphuric acid converts them into dextrin and finally into sugar.

They may be divided into five subsections, according to their chemical composition—

1. *The Arabic group* chiefly consists of arabin. They are almost entirely soluble in cold water, forming a mucilage. Examples: All kinds of acacia gums, mesquite, feronia, or wood-apple, buchanania, and acajou gums.

2. *The Cherry group*, such as cherry, peach, and apple-tree gums, consist chiefly of cerasin, and swell in cold water, forming a poor mucilage.

3. *The Tragacanth group*, namely Tragacanth, Kuteera, Nopal, Moringa, and coker-nut gums, consist chiefly of bassorin, and swell in cold water, forming a mucilage.

4. *The Dextrin group*, comprising dextrin, British gum or gommeline, consist of almost pure dextrin. It is soluble in cold water, forming a thick viscous solution, which has strong adhesive properties.

5. *The Seaweed group*, including Japan isinglass, from *Gelidium corneum*, are represented chiefly by gelose, which form a jelly with 500 times its weight of water.

In commerce gums and resins are often confounded; but gums, gum-resins, resins, and juices may be easily distinguished by rubbing their surface with water. If a gum-resin contains even a small proportion of gum, it becomes milky, which is not the case with resin. Gum-resins also char in a flame, instead of melting, and are only partly soluble in alcohol. Gums either swell up or dissolve to form a mucilage with water and char when heated. Resins and oleo-resins melt and burn readily when heated, a few however only swelling up before burning. Dried juices, like all other plant products, differ in taste, odour, or solubility in alcohol and water. Gum Elémi and gum copal are true resins; and gums of ammoniacum, galbanum, gamboge, South American hog-gum, myrrh, opopanax, cumbi, olibanum, etc., are *gum resins*.

Several of the principal sorts are described under their respective names; see also *Dextrine*, *Tragacanth*, *Arabic*, *Kauri*, *Acacia*, etc.

Gums are of various qualities and colours, but the whitest are generally considered to be the best. They are usually brittle, more or less translucent, and break something like glass. The darker hued red varieties are considered inferior.

Gum Animé is a valuable kind of African *gum resin* obtained from the *Trachylobium vernicosum*, and fetches by far the highest price for varnish making. There are four kinds, viz.: *West Indian*, in pieces about the size of hen's eggs; *East Indian*, about the size of hazel nuts; *American*, not unlike East Indian, only brown, instead of reddish-yellow, and *Oriental*, which is seldom met with.

Ghatti Gum or *Amrad Gum* is an excellent Indian kind double the strength of Turkish acacian gum, and particularly suitable for pharmaceutical purposes. It is the only kind used in India by pharmacists.

Mexican gum.—At the present time the whole of the export trade in chicle gum from Mexico is in the hands of very few persons, and the importers and manufacturers of chewing gums in the United States are also very few in number—perhaps half a dozen—who not only hold contracts with the exporters, but also refuse to sell the raw material. (See *Chicle Gum.*)

Gum Senegal, or *Acacia Senegal*, is the produce of a species of acacia, called in Egypt "Tullach" or "Tulch." It is found in many parts of Africa. When pure, it is of a dark reddish colour and opaque. It is much inferior to the best gum arabic, but is often substituted for it. Large quantities are found in Turkey, especially in the Yembo and Medina districts.

Jeddah Gum is of good quality, but not considered equal to that of

Kordofan, which is nearly white and more friable.

It abounds in the district of El Ghazel, near the sources of the Nile, and it reaches us *viâ* Khartoum and Alexandria.

There are other South African gums, *Acacia horrida* and *Acacia Giraffæ*, abundant in German territory; but these are very inferior, and only sell when Kordofan product cannot be had.

Apply to C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Gum Dragon. — See. *Tragacanth.*

Gum Drops. — (See also *Gelatine Goods.*)—A confection originally made in the United States from gum arabic and cane sugar, and delicately flavoured with rose, lemon, etc. When so made they have valuable demulcent properties, besides being agreeable sweetmeats.

They are, however, often made up from glucose, gelatine, starch, etc., and in this case are apt to deteriorate quickly, so as to become unsalable.

Gum (Liquid). — One that will keep:—Dissolve 1lb. gum arabic in 3 pints of cold water; when dissolved add a tablespoonful of glycerine, 1½ ozs. of honey, and 20 drops of oil of cloves. (See also *Paste.*)

To make labels stick better on glass the gum (or paste) should have a little aluminium sulphate mixed in it. For instance, dissolve 2 parts alum. sulph. in 20 of water and add it to 250 of strong gum (2 of acacia gum to 5 of water). Or take 1 oz. gum arabic, 1 oz. gum tragacanth, 40 mim. acetic acid, 1 oz. glycerine, and 2 ozs. water. Dissolve the gums in the water (hot), then add the acid and glycerine.

Gumbo, Gombo, or Okra Pods. —F. *Gombaud.*

The tapering 5-10 angled and unripe capsules of *Hisbiscus esculentus*, 4 to 10 inches long. It grows upright, not unlike a cow's horn, and pointed at the end. Called *Bendi-Kai* in Southern India. Comes from United States in tins for soups, etc.

Gumbo is, indeed, the name for Okra soup, as well as the name by which okra is often known in the Southern States. There is also a round fruited species, but the long fruited is the best known. It has several other names—such as *ketmie*, *guiabo*, *bamie*, etc.—and is usually cut before it is ripe, when it has an agreeable acid taste. (See *Okra.*)

Gumbrinskoe.—See *Russian Wines.*

Gunjah. — See *Bhang.*

Gunny Bags, Cloth, etc. — Gunny is the strongest coarse canvas or sackcloth in which pepper, ginger, rice, gums, and other tropical produce are generally shipped. Bengal gunny-cloth is made from *jute*, the fibre of the plants *Corchorus olitorus* and *Corchorus capsularis*, but another kind is made in Madras and Bombay from a variety known as sun-hemp. It used all to be made in handlooms by the natives—men, women, and children, boatmen, labourers, and domestic servants of all classes in their spare moments, but now the great bulk is made in steam factories. Gunny is largely manufactured from the imported jute at Dundee in Scotland. Both bags and cloth are also exported —new and clean—from India in very large quantities, say a hundred million bags a year.

Gunny bags weigh on an average about 2lbs. each, and gunny *cloths* are usually 30 yards long, and weigh about 6lbs. each.

Gunpowder.—Da. *Krudt, Pulver;* Du. *Buskruid;* F. *Poudre;* G. *Schiesspulver;* It. *Polvere;* Pol. *Proch;* Port. and Sp. *Polvora;* Rus. *Poroch;* Sw. *Krut.*

An explosive compound of sulphur, nitre, and charcoal. That made at the Royal Mills, Waltham Abbey, is simply a mixture of 75 parts saltpetre (nitre), 10 sulphur, and 5 charcoal. A better would probably be 75 parts nitre, 11·77 sulphur, and 13·23 charcoal.

Each substance is first purified and reduced to a fine powder; they are then put together, water added, and thoroughly well mixed. The paste is then generally pressed into small "pressed cakes," which after being dried are broken up and crushed between gun-metal rollers, then sifted and divided into the various sizes of grains. It is next glazed by friction, the grains being put into a bag, barrel, or machine, and subjected to a brisk shaking. This glaze is very important, for it afterwards helps to keep the powder from absorbing moisture, and to be moved about with less danger. The powder is finally thoroughly dried in a room heated to 100° Fahr.

Smokeless Powders.—The composition of these is kept secret by the various Governments, but one of the chief components seems to be *celluloid*, a substance obtained by boiling paper pulp with camphor.

When ordinary gunpowder explodes that which was solid is changed into gas, and requires about two thousand times more room, hence it drives everything out of its way, splits rocks, blows balls out of cannons, etc.

The powder used in big guns is queer-looking stuff. Each grain is a hexagonal prism, an inch wide and two-thirds of an inch thick, with a hole bored through the middle of it. In appearance it resembles a piece of wood. If you put a lighted match to it it will take seven or eight seconds to go off.

The manufacture, keeping, carriage, and sale of gunpowder are necessarily subject to numerous statutory regulations, which should be carefully read and remembered by dealers. No dealer is to keep more than 200lbs. in stock, nor any person more than 50lbs. within a mile of a market town or half a mile of a parish church.

Gunpowder Tea.—(See also *Green Teas.*)—The Chinese name for this is Yuen Choo (round pearls). Its English name is derived from its irregular lumps, which resemble the large grain of blasting powder. It is the finest kind of green tea, and consists of the early spring leaf buds, and particularly the fine hairy summits of the youngest branches of the shrub, which after being carefully picked are rolled and rounded by hand so as to have a granular appearance. One kind is known as *Moyune*, another as *Imperial*. Like other green teas, gunpowder tea is prepared from the same plant as black teas, but roasted immediately after gathering, and in another manner.

"*Shotty Gunpowder*" is a term applied to exhausted and spurious leaves rolled into gunpowder pellets, and given consistency and weight by a peculiar paste made for the purpose. Gunpowder teas possess about 52 per cent. of soluble matter. Half chests contain about 66lbs. each, and boxes 37lbs.

Gur or **Goor.**—A "compost" of cane sugar, used in India. It is very coarse and dark in colour, but very cheap, and suits the natives better than refined. It has a peculiar flavour, which is absent from machine-made sugars.

Gutta-Percha, although not a "gum" in a strict sense of the word, is a name derived from Gutta (gum) and Pulo Percha, the island where it was originally obtained. The *Percha Tree*, of the natural order *Sapotaceæ*, is a native of Singapore and other Malay Islands, where there are immense forests of these trees, the juice of which is obtained by tapping, and so yields us the invaluable *gutta percha.*

It was first discovered by Mr. Thomas Lobb in his botanical mission to Singapore and other Malay Islands, but was first sent to Britain by Dr. Montgomery in 1843 to the Society of Arts, which awarded him a gold medal. Below the temperature of 50° gutta-percha is as hard as wood, but rises with warmth until it becomes quite soft and pliable.

Gypsum or **Sulphate of Lime.**—Da. *Gibs;* Du., G., and Sw. *Gips;* F. *Gypse;* It. and Port. *Gesso;* Rus.

Ghips; Sp. *Yeso, Aljezon;* W. *Cymmryd-faen.*

Gypsum is a soft chalky kind of stone, or sublimate of lime, usually of a white colour, but sometimes grey, yellow, red, and, if very impure, brown or black. Found in France and various parts of the Continent, also in Derbyshire and Notts. It is extensively quarried at Stogumber and in Nova Scotia. It is very soft, and easily scratched. One kind, fine-grained, white, massive, and marble-like, is called *Alabaster;* another crystallised variety, transparent, and cleaving easily, is called *Selenite;* and a still more beautiful kind, with a fibrous and pearly opalescence, is known as *Satin Spar.* When reduced to powder and formed into a paste with water, gypsum is termed "*Plaster of Paris,*" being first introduced from that city. All these varieties are used for making ornamental articles, inlaid work, busts, necklaces, rings; also used by brewers for hardening water, etc.

H

Haberdine.—A name for dried salted cod-fish.

Haddock.—Da. *Kuller;* Du. *Schelvisch;* F. *Aigrefin, Merluche;* G. *Kabeljau, Schellfisch;* I. *Merluzzo;* Port. *Pescada;* R. *Vakhnya;* Sp. *Merluza;* Sw. *Kolja;* W. *Math o fôr-bysg.*

The haddock is a fish closely related to and resembling the cod, with similar arrangement of fins, namely, three dorsal and two ventral, also a similar barbule at end of lower jaw; but it may be distinguished by its smaller mouth, and its first dorsal fin is much more pointed. It has also a black mark down the back, and on each side of its body a round black spot, just above the fin and behind the gills. Some people aver these are the finger marks left by St. Peter when he took the pence from its mouth, but they do not explain what this salt water fish was doing in the fresh water of an inland lake!

The best haddocks are netted in large shoals in the deep waters off the East Coast, and the largest off Dublin. They are excellent fish when either eaten fresh or slightly salted and smoked.

"*Digby Chicks*" is a trade name given to the haddocks caught and cured at Digby Neck, a very pretty spot between Digby village and St. Mary's Bay, Nova Scotia. The fish are caught and brought right up to the factories, and handed out from the boats while still trembling. They are at once taken in hand by a number of men and transferred to what are called the fish-houses, where their heads are taken off and they are thoroughly cleansed, split open, and pickled clean, again washed and salted, and then put through that peculiar process which gives them the delicious flavour so much appreciated. They are then strung on long rods, dried for a few hours in the sun, hung in the smoke-house, and smoked with hardwood for fifteen to eighteen hours. After this they are transferred to the packing-house and cooked in a steam box, from whence they are slid into hollow tables covered with metal and taken in hand by the girls, who carefully bone and skin them and put them into the cans, which, when filled, are taken in hand by more girls, carefully weighed and washed, and passed on to the boy who covers them, whence they go into the hands of the sealers. As fast as the cans are sealed they are stowed in large bath pans and put into a tank, where they are steamed for a couple of hours, after which they are taken out and tapped, so as to let out the air that remains, and then re-sealed. Only indurated fibre vessels are used, so that no possible dirt can accumulate, and the flavour, cleanliness, and quality leave nothing to be desired.

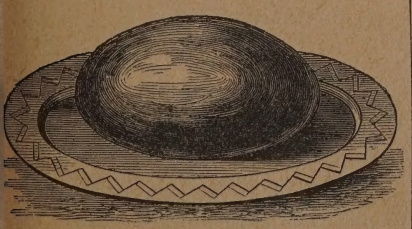
Finnan or *Findon Haddock* is

so named after the little fishing village of Findon, about eight miles south of Aberdeen, where haddock-smoking with peat has attained the greatest perfection. Elsewhere imitation Finnon haddocks are often prepared without the aid of smoke, the fish being merely washed in acetic acid and water and then hung up to dry. Enormous quantities are cured by London costermongers on the Surrey side of the Thames. Boys and girls are employed in beheading the fish, splitting them open, and scraping off all dirt, and then plunging them into tubs of brine; the fish soak there for about three hours, and then the skewering up process commences.

The larger haddocks are first one by one taken from the tub, and a peeled stick is passed through each fish until there are as many as the stick will hold. The smaller fish are treated the same way, and finally all are hung up in a little smoke-house, a fire is kindled on the ground and kept smouldering by a judicious application of sawdust underneath the haddocks. The whole process occupies only six or eight hours. In the wholesale markets fresh haddocks are usually sold 3/- to 15/- the trunk, 14/- to 20/- the "turn," or £20 to £30 the "machine."

A considerable quantity of frozen haddock is now exported in winter from Hammerfest, Norway, to Hamburg, for use in the North German garrisons, where, eaten with potatoes, it is very cheap food and well liked.

Haggis, Haggess or **Haggies.**—A popular Scotch dish made of the heart, lungs, and liver of the sheep, hashed or finely minced (about a quarter of the liver being grated), with suet, onions, oatmeal, salt, and pepper. The whole is usually sewn up in either the large stomach bag, or a smaller one called the "king's hood," of the sheep, well cleansed.



SCOTCH HAGGIS.

Burns wrote a fine poem on the haggis, calling it "Chieftain of the pudding race," etc.

Hair Dyes.—These are not so much used as formerly. They generally have lead or silver as their base, although the prejudicial effects of lead and silver salts have been so often pointed out by medical men.

Others are vegetable dyes guaranteed free from any mineral substance, but the profession seems to be divided as to whether these are innocuous or otherwise. Bismuth, pyrogallic acid, and certain astringent vegetable juices are also occasionally employed.

All those containing nitrate of silver are apt to stain the skin as well as the hair unless very carefully used. Hairdressers often smear hard pomatum over the adjacent skin near the hair to protect it from the dye.

Lead does not stain the skin, but does not impart the rich colour which silver produces.

Hair dyes are often the cause of severe headaches, local eczema, and other affections.

For materials apply to C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Hair Oils.—F. *Brillantine.*

Various kinds of oil are perfumed and bottled for use as hair oil, and sometimes colour is added, the main objects being to get an oil that will keep transparent, thin, and free from objectionable smell.

Refined or debloomed petroleum and other oils are used when highly refined so as to be almost odourless, and these are often flavoured with either neroli, citronella, or cassia oil.

Seed oils, such as refined stettin or colza, are also extensively perfumed

with citronella, say half a teaspoonful for every pound of oil.

A fair oil is made from 15 gallons yellow cotton-seed oil, scented with 12 ozs. oil of lavender, 2 ozs. oil of thyme, and 4 ozs. oil of cloves; or it may be coloured with alkanet, steeping 2 or 3 drms. of the root in each pint of warm oil till coloured to shade desired, and scented with 8 ozs. oil of bergamot, 6 ozs. oil of cassia, 4 ozs. oil of cloves, and 1 oz. white oil of thyme; or a good hair oil is produced by taking a gallon of refined mineral oil and adding 2 ozs. of citronella and 1 oz. of oil of bergamot.

One gallon will fill a gross of ounce bottles.

Hair Powders.—These usually consist of starch or potato flour reduced to a very fine powder, and then scented with a few drops of essential oil of roses, violet, or other perfume, according to fancy.

For materials apply to C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Hair Restorers.—Perhaps the most satisfactory preparation is simply an odourless and colourless non-viscid petroleum, of specific gravity between 0·865 and 0·870. This, suitably coloured and perfumed, say with lemon oil or oil of citronella, gives a hair restorer which is really efficacious. It acts both as a germicide and as a stimulant to the hair.

Hake.—A fish of the cod family, sometimes called *Herring Hake* or *Stock-fish*. It is a coarse quality, of whitish colour, with grey on the back. Mostly caught by lines on the Atlantic coasts at the North of Europe and off Nova Scotia.

Hakes are 2 to 4 feet long, with broad flat head, the mouth very wide, and the lower jaw extending beyond the upper. Of its two dorsal fins the first is small and triangular, while the other extends to half the length of its body, and its anal fin (of same shape and size) is exactly opposite.

The hake is very voracious, feeding chiefly on herrings and pilchards.

Its flesh is somewhat coarse, and not much esteemed; but it is always cheap, and large quantities are salted and dried.

Halford's Curries.—So called after Mr. Halford, once *chef* to Lord Dalhousie when Governor-General of India.

Halibut or **Holibut.**—W. *Lleden y mor*.

The largest species of the flounder or flat fish family, measuring 3 to 6 feet long, and weighing up to 100lbs., 200lbs., and even 500lbs. each.

Its two eyes are both on the right side of its head. Mostly caught by hook and line off Greenland, Norway, Scotland, and similar northern latitudes. After being caught they are often kept alive six or eight weeks by being packed in large perforated boxes, which are sunk or floated in a dock or other shallow water.

Usually sold wholesale by the *stone*, price 5/- to 10/-.

A very reprehensible cruelty prevails among fishermen and others of hanging up these fish alive by the tail. They are often so held until the pressure actually cuts through the softer parts, leaving the bone exposed.

The flesh is white and firm, but rather dry and coarse; the fins and flaps, however, are considered tender and delicate. (See *Soles*, *Plaice*, etc.)

Besides being cooked and eaten fresh, it is salted, dried, and smoked. Halibut is often sliced up and pickled in barrels.

Hall's Hair Renewer.—Precipitated sulphur, 1 drm.; acetate of lead, 1 drm.; common salt, 2 drms.; glycerine, 8 fluid ozs.; bay rum, 2 fluid ozs.; Jamaica rum, 4 fluid ozs.; water, 16 fluid ozs. Shake well before using.

Ham, Potted.—This is generally expected to be prepared from the Westphalian ham, the flavour of which is so highly esteemed by *connoisseurs*, Like other *Potted Meats* (which see),

it is highly seasoned, and intended as a relish.

Hams. — Du. *Hammen;* F. *Jambons;* Ger. *Schinken;* It. *Prosciutti;* Port. *Presunto;* Sp. *Jamon.*

These consist of the thighs of the pig, salted, smoked, and dried, or otherwise cured; but sometimes, rightly or wrongly, the shoulders are carved out to represent hams, and sold as "*Pic-nic Hams*" at a low price.

In England the most noted counties for fine hams are Yorkshire, Cumberland, Wiltshire, and Hampshire. The Devonshire long-cut hams—smoked or pale dried, and produced in the district round Plymouth—are also highly popular.

Those of Westphalia (see *Westphalian Hams*) and Portugal are highly esteemed on account of their exquisite flavour.

Mayence, Hamburg, and Stuttgart are each celebrated for hams. In Paris the *Foire aux Jambons*, held in Lent, is one of the most ancient, popular, and successful of French fairs. During the three days it lasts the sales amount to many hundreds of tons.

The ham of Bayonne owes its fame to the chestnuts on which the pigs feed. The *petits jambons vermeils* of Montanches are from porkers fed on chestnuts and snails.

Of English hams, those which are short in the hock are considered best; a sharp knife or skewer pushed under the bone should have a pleasant smell when withdrawn.

Smoked Hams have a strong taste, and are more fitted for a relish than for diet, and they should be particularly avoided by the dyspeptic and by convalescents.

Old hard hams should be soaked for about twelve hours before cooking. In boiling hams they should always be put into cold water, and *gradually* heated. A 14lb. ham requires about 4 hours, 16lb. 5½ hours, and a 20lb. ham will take about 6½ hours to dress it properly. (See *Smoked Meats.*)

American hams are now mostly cured in salt and then packed in borax. They come to England in boxes of about 5 cwts. When unpacked they are washed and dried, or scraped and smoked. If it be desired to put a nice clear skin upon them, to show well, they are dipped in hot water until the skin is softened, and are then scraped. During this operation the original brands are often obliterated, and sometimes other marks are substituted.

One of the curious businesses that men engage in is ham-smelling in packing-houses. It is a business allied with that of tea-tasting, wine-testing, and the like. The ham-smeller is technically known as ham-tester. It is his business to inspect meat products and judge of their soundness. This is done before the meats leave the house, or when they are brought from other concerns to fill a shortage.

The ham-smeller's only tools are a long steel trier and his nose. It is often necessary to test hams after they come out of the sweet pickle and before they go into the smoke-house. The ham-smeller stands in a barrel to keep his clothes from being soiled by the dripping brine, and the hams are brought to him by workmen. A ham is laid before him and he plunges his sharp-pointed trier into it, withdraws it, and places it swiftly beneath his nose. The trier always goes down to the knuckle joint. In testing meat in that manner the man with the trier judges by the slightest shade of difference between the smell of one piece of meat and another. The smell of the meat is almost always sweet, and that is what he smells; the slightest taint or deviation from the sweet smell is, therefore, appreciable. It is not the degree of taintedness that he expects to find, but the slightest odour that is not sweet. When he detects an odour he throws the meat aside, and if it is not unwholesome it is sold as "rejected" meat, but if it is tainted it goes to the rendering tank. The ham-tester smells meat from seven o'clock in the morning until five o'clock at night, and his

sense must never become jaded or inexact, or his usefulness would be at an end.

Ham-testing is not a pursuit dangerous to the health, as tea-tasting is supposed to be, but the ham-smeller with a cold in his head is like a piano player who loses his arm in a railway wreck.

Flies.—To protect hams from those troublesome little flies, *Dermestes lardarius*, which lay their eggs in the hams and soon fill them with maggots, it is best to brush the hams over with a little pyroligneous or acetic acid, of ordinary commercial strength. In fact, acetic acid is now largely employed in factory-cured hams and bacon, fish, etc.

Procure some cheap muslin, about 1d. or 2d. a yard, and cut it in pieces large enough to cover the face of the ham, and extend in every direction an inch over the rind. The part that extends over the rind may be covered with common paste, and attach it to the rind, taking care that the muslin adheres properly. Care should also be taken that the muslin is drawn tight over the face of the ham, when the projecting parts will keep the muslin away from the crevices, where the fly is only too fond of laying its eggs. By this plan fifty hams may be covered for less than 1/-.

Recipe for Sugar-Curing Hams.—As soon as the meat comes from the butcher's hand rub it thoroughly with salt, and repeat this four days, keeping the meat where it can drain. The fourth day rub it with saltpetre and a handful of common salt, allowing 1lb. of saltpetre to 70lbs. of meat. Now mix 1lb. of brown sugar and 1lb. of molasses, rub over the hams every day for a fortnight, and then smoke. Hams should always be hung highest, because they are then less liable to the attacks of insects.

Another recipe says the brine may consist of 45lbs. salt, 5lbs. borax, 4lbs. sugar, and 3lbs. saltpetre to every 20 gallons of water.

Cooked Ham has lately become a salable adjunct to the grocery trade in some localities, and there is a tendency on the part of two or three firms to limit the business to proprietary brands; but it is to be hoped that retailers will have the good sense to decline this idea, and boil the hams themselves as required.

Why should a grocer fetter himself by introducing other peoples' brands so unnecessarily?

How to Boil a Ham.—Soak it in cold water from six to twelve hours; place it in a kettle, and cover it with cold water; bring it very slowly to a boil; remove the scum, and simmer it softly, allowing about 4lbs. to the hour, until the skin can easily be removed. After taking off the skin replace the ham in the liquor, and leave it there until it has become cold; then rasp it in the usual way, and brown it off in the oven. If the ham be not probed or cut it will retain all its juices and be very mellow.

Apply to *Hillier's Bacon Curing Co., Ltd.*, Newmarket, near Stroud. (Three Prize Medals.)

Bologna Sliced Ham.—Bologna hams, like Bologna sausages, owe their celebrity to the plentiful growths of chestnuts and acorns in the immense forests where the pigs feed. It is not, however, sufficiently well known in this country that the famous Bologna ham may now be had ready cooked and sliced, in small flat oval tins of ½lb. each.

There are several packers and probably several qualities, but the original and by far the most celebrated brand is that of Fratelli Nanni, of Bologna. In their tins we have ham of exquisite flavour and quality, nicely cooked, and beautifully sliced, ready for eating either in sandwiches or otherwise.

Travellers and others at home and abroad who have so often been disgusted with the flavourless and insipid American ham (and hams nowadays are mostly American) will fully appreciate this great improvement.

Already many householders find it both convenient and economical to keep a few tins of really good ham in their

larders ready for any emergency. Each tin has a key attached, and is easily opened without disarranging the contents, which latter are found quite as fresh and appetising as the best newly-cut ham.

Retailers would do well to apply to Prevet & Co., the sole importers, 134 Fenchurch Street, London, E.C., for samples and prices.

Hankow Teas.—These Chinese teas have deteriorated and suffered much in repute these last few years.

There are several establishments in Hankow where teas from other districts are refined and prepared for export to foreign markets.

Hard Fish.—A general term for salted and dried or smoked fish, such as cod, hake, ling, and other stock-fish.

Hares. — F., Port., and Sp. *Lièvres;* Ger. *Hasen.*

The hare is a mammel of the *Rodentia* or gnawing order, and there are several species, but they all have four incisors in the upper jaw, with two small square teeth behind them, five or six molars in the upper jaw and five in the lower.

Hares are found all over the world, except Australia. They are mainly night-feeders, each one making its own couch in a tuft of grass or other herbage. They dislike and fight rabbits whenever they meet.

The flesh of those from hilly districts is best; those reared in low damp lands are not so good for eating. A young hare during the first year of its growth is termed a *leveret.*

A full-grown English hare is about 27 inches long and a foot high, and weighs 13 to 20lbs.

Haricot Beans. — F. *Haricots, Fayots;* Ger. *Weisse Bohnen;* Port. *Feixoes;* Sp. *Habichuelas Secas, Aluvias.*

The white haricot bean (*Phaseolus vulgaris*), or *Haricot Blanc* of the French, is a native of India; and although it will grow wherever other beans will grow, yet its cultivation is mostly confined to France, Germany, Italy, and Switzerland, from which countries they are exported to the English markets.

The *Scarlet runners* or *French beans* of our English gardens are climbing varieties of the same family, but are usually gathered and cooked while green and immature in this country.

The large and floury variety known as *Haricots de Soissons* are the finest, and are grown around the town of Soissons, in the Aisne Department of France. Another white variety, *Liancourt,* grown in the district of that name in Oise, are of flatter form, drier, and firmer, and less liable to burst in cooking.

The *St. Esprit Haricot* is also a white sort, and so called from two small marks vaguely resembling a dove, the symbol of the Holy Ghost.

The other white haricots are *Suisses blancs, Flageolets blancs, Flageolets verts* or *Chevriers, Nains, Gros pieds, Lingots,* etc. (*Soissons* and *Chevriers* are always highest priced.)

Among the red and variegated coloured are the Chartres, *Suisses rouges, Cocos roses,* etc.

Haricots Riz (or rice haricots) are, as the name denotes, a small but very prolific variety, and somewhat floury.

Haricots are usually sown late in April, and cultivated same as field peas. When the pods are well filled and begin to turn yellow they are ripe, and the plants are then pulled up, dried, and thrashed like peas.

There is, perhaps, no other vegetable dish so cheap and so easily cooked, and at the same time so agreeable and nourishing. Haricots merely require soaking for about twelve hours, boiling, and then mixing with a little fat (or salt butter) and a little milk (or flour and water). To avoid bursting them, boil slowly.

The white skin-coverings in which the inner seed lobes are enveloped should not be eaten by delicate persons, as that tough substance is most indigestible, even in young beans.

Of red haricots there are the *Ordinary* and the large *Spanish*, of red, violet, and white or grey colour; but these (*Haricots du pays*) are grown more as ornaments for gardens, their beautiful white and red or streaky flowers being universally admired.

As a substitute for animal food during Lent and other fast-days haricots have long been highly popular, especially in Roman Catholic countries, and their use in England in days gone by was considered a sure sign of "Popery."

In a dried state they should be chosen of uniform size, large, firm, and full, with the skin smooth and white.

They sell best in cold weather and between the potato seasons, when old potatoes are getting out of condition and new ones are dear.

(A table of weights and measures of haricots will be found under *Peas*.)

Haricots Flageolets.— See *Flageolets*.

Haricots Verts (*French Beans*).—G. *Grüne Bohnen*.

Haricots Verts (green haricot beans), in pod, come from France, preserved in bottles or tins, 50 or 100 to the case, and are classed and quoted as *mi-fins* (large), *fins* (small), *très fins* (very small), and *extra fins*—the largest growths being lowest and the least or youngest the highest in price.

Apply to J. A. Sharwood & Co., Ltd., St. George's House, London, E.C.

Harlequin Soap.—This ordinarily consists of variously-coloured soaps, which (having been made separately) are cut into lumps of suitable size and are then stirred up in a liquid cold-process soap which is more or less transparent. When cold and set the mass is cut into blocks, stamped, and polished, and packed in ornamental boxes.

Harmless Colours.—See *Colours for Foods*, etc.

Harness Blackings.—(See also *Blacking*, *Liquid Blacking*, and *Shoemakers' Black*.)—For cleaning all kinds of black leather harness, carriage headings, aprons, etc. Recipe:—8 ozs. beeswax softened with 1 oz. turpentine, adding 2 ozs. ivory black, 1 oz. Prussian blue, and ¼ oz. copal varnish. It is applied with a brush, and may be polished with a duster.

The word "harness" is from the old French word "*harnois*," the armour of a soldier, which used to be fastened on with straps and buckles.

A good harness blacking is also made by melting 2lbs. beeswax, and then adding 10 ozs. bone-black, 4 ozs. Prussian blue ground in oil, 4 ozs. oil of turpentine, and 2 ozs. copal varnish. It should be well mixed and formed into balls.

Another is made with isinglass or gelatine and indigo, say ¼ oz. each, 4 ozs. logwood, 2 ozs. soft soap, 4 ozs. glue, and 1 pint vinegar. These are heated, mixed, and strained.

Harness Composition:—

Ordinary constituents	Parts by Weight.
Beeswax (best yellow) ...	90
Spirits of turpentine	900
Animal charcoal (ivory black)	50
Indigo	5
Prussian blue	10
	1055

Melt the wax in a suitable vessel, reduce the other ingredients to the finest possible powder, intimately mix them in the dry state, and stir into the hot solution of wax in spirits of turpentine. Cool gradually with constant stirring, and pack into boxes for sale.

Special Manufacturers.—Day & Martin, Ltd., London and Liverpool. (See advt. near end of book.)

Harness Polish.—A good one is made from 4 ozs. of glue, 6 gills of vinegar, 2 ozs. gum arabic, 2 gills of black ink, and 2 drms. of isinglass. Break the glue in pieces, put it in a dish, pour over it about three parts of the vinegar, and let it stand till quite soft. Dissolve also the gum in another vessel with the ink, and let the isinglass

melt near the fire in as much water as will cover it. When all are ready pour the rest of the vinegar into the softened glue, and place it on a stove or over a moderate fire, stir it till hot and thoroughly dissolved, but do not let it reach boiling point; then add the gum and stir again till hot and well mixed, and finally add the isinglass in the same way.

For use, warm a little as required in a saucer till it becomes liquid, and apply a thin coat with a fine brush or sponge and dry quickly.

For materials apply to C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Hartshorn. — F. *Corne de Cerf;* G. *Hirschhorn;* Lat. *Cornu cervi.*

This consists of the horns of the male deer without further preparation. The chemical analysis of hartshorn is sufficiently known; it yields a water highly impregnated with a fetid oil and volatile salt, by the common distillation in a retort on an open fire. The remainder in the bottom of the retort, after the distillation is finished, is black, but in calcining it in an open fire it becomes white and friable, and is then sold under the name of *burnt hartshorn.*

Harvey's Sauce.—It is said this sauce was first compounded in 1795 by a person who sold the recipe to Elizabeth Lazenby, under whom the sauce acquired the name of *Lazenby's Harvey's Sauce,* but in the Rolls Court, 1870, it was decided that other parties had also a right to make and sell Harvey's Sauce, provided they did not colourably imitate Lazenby's label.

A modern recipe:—2½ gallons walnut ketchup, 2½ gallons mushroom ketchup, 3½ gallons soy, 1¼lbs. garlic, 7½lbs. sprats, ¼lb. cayenne pods. Boil twenty minutes, stir, cool, and strain.

An excellent Harvey is now made by Allen Jeeves & Sons, Seddington, Sandy, Beds.

Hasheesh or **Hachshisch.**— See *Bhang.*

Haut-Brion Wine is esteemed one of the best of the *Vins de Graves* in the Gironde department, France. The bouquet savours of the violet and raspberry, and the flavour of burning sealing-wax.

The estate of Chollet, where it is produced, is the property of the French Government, and comprises about 58 acres. The wine is not bottled until six or seven years after vintage.

Hay Spice.—A mixture of aromatic herbs, spices, and roots. Intended to utilise damaged hay by perfuming or flavouring it, so that animals will eat it. Sold freely to farmers and others.

Hazel Nuts.— Da. *Hasselnodder;* Du. *Hazelnooten;* F. *Noisettes;* G. *Haselnüsse;* It. *Naccinole, Avelane;* Pol. *Loskowy Orzeck;* Port. *Avellaes;* Rus. *Orechi;* Sp. *Avellanas.*

Hazel Nuts comprise several varieties:—Kentish Cobs, Filberts, and Barcelona nuts.

These are the fruit of the hazel, *Corylus Avellana,* a supple underwood, bush, or small tree, of a hardy and deciduous character, so named from Avellino, in Italy, where they were first cultivated. There are about a dozen species, the chief being known as the white and red *Filbert,* the large and clustered *Cob,* and the *Barcelona* (vars.: *ovata, pumilla,* and *variegata*), as imported from Tarragona, all improved from the common hazel nut.

The best and plumpest nuts come from Piedmont, but very good ones also come from Sicily, the latter being quite equal in *appearance* and much lower priced.

Cadière nuts, or *Acadières,* grown near Toulon, in France, are another highly popular kind.

These small nuts are considered more nutritious than walnuts; the kernels have a mild farinaceous oily taste, agreeable to most palates, and the oil expressed from them is very little inferior to the oil of almonds. In France they are often eaten while quite green.

Hazel-nut-Oil has long been considered very valuable for watches and other delicate machinery.

Hazel Sticks as Divining Rods.—An absurd notion prevails in some districts that the whereabouts of water-sources, hidden treasures, etc., can be ascertained by sticking leafy hazel shoots or suckers in various parts of the ground, and noticing the subsequent changes in their foliage.

Hazel-nuts grow in most of the temperate climates, but attain the greatest perfection in Spain and Southern Europe. They are all subject to the ravages of a weevil, called *Bolaninus nucum*, which bores a hole into the nut and lays its eggs in the kernel, large quantities being thus rendered useless by the young larvæ. It is therefore necessary for the nuts to be kiln dried in order to keep them sweet and good.

Heading or **Froth.**—See *Foam.*

Hearthstones.—A soft calcareous kind of sand-stone, obtained chiefly at the Godstone Quarries, in Surrey.

Used for glass furnaces, backs of fireplaces and stoves, and for scouring stones, cleaning hearths, etc. For the latter purposes the stones are sold in squares at about 8d. a dozen wholesale.

Heelball.—A hard black waxy substance, employed to impart a black polished surface to the heels and soles of boots, also to harness. It is composed of indiarubber, and the black residue left in the still when refining ozokerit for candle making.

Hemp seed.—F. *Chènevis;* Ger. *Hanfsaat;* It. *Cannapuccia;* Port. and Sp. *Linnaca;* Rus. *Konoplijanoe semja.*

This is the seed of the common hemp plant, an annual which grows from 2 to 20 feet high in rich land in most parts of the world. It is of the same family as the nettle, but is readily injured by frost. The plant is, however, chiefly cultivated for its valuable fibre, which is made into ropes, canvas, sailcloth, etc. Large quantities are grown in Manila, but the best hemp (known as *Henequen fibre, Sacqui, White,* or *Sisal hemp*) is grown in Yucatan, in the east of Mexico, the annual exports reaching about 350,000 bales a year, each bale weighing about 375lbs.

Another kind of hemp, known as *Phormium*, is grown in New Zealand.

Hemp-seed is used as food for cage birds, fancy fowls, etc., and also for crushing for oil. It is said that the plumage of bullfinches and goldfinches fed on it too much changes from red and yellow to black. There are several varieties and sizes of these seeds, and one large size is known as *Parrot-seed.*

Oil of hemp-seed is a fixed oil of a greenish yellow colour, and is largely used in Russian cookery. In tropical countries both the seed and the plants develop powerful narcotic properties. The Scythians were accustomed to intoxicate themselves with a preparation from hemp-seed, as the Hindoos do now.

The Indian hemp plant yields (1) *Ganja,* an extract secreted on the female flowers, and which is smoked; (2) *Bhang,* the dried leaves; (3) *Majun,* a substance employed in preparing the intoxicating beverage known as *Hashish,* and various intoxicating sweetmeats.

In choosing hemp-seed select the brightest and toughest—that which will not break readily when rubbed.

A quarter of Riga or Dutch weighs about 336lbs.

Special Firms.—Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool; Hedley, Gamble, & Crosfield, Circus Street, Liverpool.

Wm. Gardner & Sons, engineers, Gloucester, make machines specially suitable for treating above. Catalogues free.

Herb Beer.—See *Non-Alcoholic Beers,* also *Extract of Herbs.*

Herbs.—See *Dried Herbs.*

Herb Teas.—These are made in a variety of ways, either by mixing a number of herbs together or by using one herb only. Some kinds are more or less poisonous if taken too strong or to excess—hence the sphere of the pro-

fessional herbalist, who professes to have studied the intrinsic value of each particular herb. The medicinal value attributed to herbs is not nearly so great now as it was two or three hundred years ago.

Sage Tea is considered to possess valuable aromatic and astringent properties, and is also useful for debility of the stomach and in nervous cases.

Mint is stomachic and antispasmodic. The peculiar flavour and properties of *Peppermint* are chiefly owing to the camphor which that plant contains, and of which one-fourth of its essential oil is composed.

Pennyroyal, which belongs to the mint family, has long been known to be valuable in female diseases.

Clary Flowers form the basis of a medicinal wine. (See *Clary*.)

Tansy Tea is good for colic and gout.

Fennel Leaves, made into tea, are diuretic in their tendency, and the root is aperient.

Dillwater relieves wind and indigestion, and is frequently given to infants.

Marigold Flowers form a tea good for promoting perspiration and strengthening circulation, also good for liver complaints.

Rue, or the "herb of grace," is a stimulant anti-spasmodic, increases the secretions, and excites the circulation.

Hyssop.—The leaves and flowering tops, made into tea, form a gently stimulating aromatic; also good in chronic catarrhs and disorders of the chest and lungs; often applied externally to restore the natural colour to the skin after bruises. It is an important ingredient in making Absinth, and imparts the green tinge, but is considered the most injurious factor in that baneful compound.

Rosemary Tea is a tonic and a cordial, stimulates the circulation and nervous system, and is often a cure for headaches. Sometimes the powdered leaves are taken in the form of snuff.

Balm Tea is a favourite drink in cases of fever.

Camomile Tea is a powerful aromatic bitter and a fine tonic.

Herb Tobaccos.—Composed chiefly of dried coltsfoot leaves, mixed with a little thyme, wood-betony, eyebright, and rosemary—say 6 parts coltsfoot with 1 part each of the others—all cut up fine, and well mixed.

Hermitage Wines.—F. *Ermitage*. These are some of the finest wines France produces. There are both white and red varieties, divided into five classes, of which *Ermitage Paille* is the choicest, although they are usually dry, nutty, strongly vinous, and of deep purple colour.

They are grown in the Rhone valley, near Tain, and derive their name from an old hermitage on the summit of an adjacent hill.

Herrings.—Da. *Sild*; Du. *Haringen*; F. *Harengs*; G. *Haringe*; It. *Aringhae*; R. *Selyodki*; Port. and Sp. *Arenques*; Sw. *Sill*; W. *Ysgadan*.

The herring, species *Clupea harengus*, is the commonest and most important class of fish that visits our shores. The word herring is derived from the Dutch word *herr*, an army. It is essentially a northern fish, and is found in the highest latitudes, but not further south than the North of France, their great home and rich feeding trough being within the Arctic Ocean. Early each spring the mighty herring family begins to prepare for a southern outing to warmer climes for spawning purposes, and in April or May the advance columns are anxiously expected off the North of Scotland, to be followed in a month or so by an enormous army, often six or seven miles long by three or four wide, arriving at Wick in June or July, Peterhead and Aberdeen in July or August, and Yarmouth and the Kentish coast in August or September. The Shetland Islands seem to split the shoals in two, and they invest, more or less capriciously, nearly every bay and creek round the British Isles, as well as all other similar geographical positions of Asia and America.

The herring fishery is more valuable than any other save the cod, and the first arrivals of the fish once witnessed will never be forgotten.

The sea for miles round shines with a silvery lustre from their glittering scales, for the herring swims near the surface with its nose out of the water, as though enjoying the fresh air, and the effect is very peculiar. The myriads of little fish rushing along seems to affect the very sea itself, making a loud soughing noise, like a heavy fall of rain, the result of the rippling caused on the surface of the water. These great herring armies are also accompanied by various larger fish, gannets, hawks, gulls, and other sea birds, all of which feed on the herrings. Considering these and the raids made everywhere by fishermen, it is not easy to imagine how the brave little survivors—weakened, worn, and harassed—ever reach their icy home again; but each spring the herring shoals come afresh, plump and fat, and although the season may occasionally vary at different points, yet the supply never appears seriously to diminish, nor even to require cultivation. Grimsby is a great herring port, and the weight sent off per rail from that town often amounts to 1,000 to 1,500 tons a week. The prices fluctuate extremely. Sometimes they are sold as manure, but usually good hard fish sell at £6 to £8 per last; "mazy," or "full," and "oily" qualities rarely fetch more than £2 to £4. Much also depends on the weather being wild or fine, strong gales often preventing the fishing boats getting to sea at the best time. There are divers measures. An ordinary *cran* is 37½ inperial gallons, and contains about 800 mature or about 1,000 immature herrings; a *barrel* contains rather less.

On the east coast of Scotland from Shetland to Berwick, also at Castle Bay and Stornaway, they are sold by the cran of 26⅔ imperial gallons; but on the west coast, Isle of Man, and in Ireland by the maze, which contains five long hundreds of 123 each. On the east coast of England they are sold by the last, which contains 13,200 fish. They are counted by the warp, which is 4; 33 warps equal one long hundred, 132; ten hundred equal 1,000, 1,320; ten thousand equal one last, 13,200.

One of the principal herring fisheries of Ireland is at Ardglass, where a fleet of over 300 boats finds ample employment. As much as £4,000 of fish has been taken in one night.

Herrings never go up rivers to spawn. Each female appears to produce some 10,000 eggs in a season. A young herring grows at the rate of about one-third of an inch a month, and matures at two years old, but is not even then full grown. They are said to feed on crustacea and other small pelagic organisms.

"Full fish" is a trade term applied to the second class of herrings when the roes and milt are largely developed. After spawning they are termed "spent fish."

It has been calculated that a single pair of herrings, if allowed to reproduce undisturbed and multiply for twenty years, would not only supply the whole world with abundance of food, but would become inconveniently numerous.

Herrings are marketed and treated in a variety of forms. (See *Fresh Herrings*, *White or Pickled Herrings*, *Kippered Herrings*, *Red Herrings*, *Bloaters*, *Bloater Paste*, etc.)

Hickory-nuts.—The fruit of *Carya alba*, and chiefly imported from the United States.

High Caste Ceylon Tea, and Silver Packet Teas.—Agents wanted in districts where not yet represented. Show cards, etc., with first orders, bill heads, hand bills, memorandum forms, posters, and a variety of printed matter supplied at frequent intervals. Illustrated almanacs free of charge in December. Only one agent in each town.

Write for particulars to Spencer,

Turner, & Boldero, Limited, Lisson Grove, London, N.W.

Hipi. —"Hipi" is Maori for sheep, and is also the name given to a Mutton Extract manufactured in New Zealand from fine mutton.

Hippocras.—A spiced wine, based on ginger, cinnamon, and Grains of Paradise.

Hock or **Hochheimer.**—The name of *Hock* is now commonly applied to any white German or Rhine wines, but the true Hochheimer is grown to the eastward of Mentz (Mayence) between there and Frankfort, especially around Hochheim, and is mellowed best in large vessels such as the famous Heidelburg Tun, which will hold some 600 hogsheads.

It is a wine of exquisite flavour, with about 7 per cent. of absolute alcohol, and may be either "still" or sparkling.

Sparkling Hock is made in the same way as Champagne, and is often sold for it. Probably the finest brands are the Hochheimer "Domdechanei," but there are many commoner and lower-priced brands. Hochheimer wine is very popular in Germany as the working man's beverage, and the flavour is fancied to be improved by drinking it out of thin green glasses.

"Cape Hocks" are produced in the village of Paarl, Cape Colony, and are considered to be the best dry wines of Africa.

Hodge-Podge. — See *Hotch-Potch.*

Hoe-cake.—See *Maize Bread.*

Hog-nuts. —The fruit of *Carya porcina,* chiefly grown in Canada, but not often met with in trade.

Hokey-Pokey.—A flash name for a cheap sweetmeat, often sold in the streets, country fairs, etc. It is usually made from the common Neapolitan ice-creams, which, after being moulded into small brick-shaped squares, are re-frozen and wrapped in papers.

Sometimes hokey-pokey is made by boiling white sugar to a candy, colouring it pink or white, and then cutting it into squares about ¾ oz. or 1 oz. each.

Hollandaise.—A rich fat sauce used chiefly with hot boiled fish.

Holder's "Victorian" Raspings. —For Fish, Rissoles, Cutlets, etc. This special preparation is far superior to bread-crumbs, so generally used, and should be invaluable to chefs and housekeepers generally.

Agents wanted. Sole Manufacturers. —W. Holder & Co., Woodbridge, England.

Holland's Gin.—Du. *Genever;* F. *Genièvre;* G. *Gaud, Genever;* It. *Acqua di Ginepro;* Port. and Sp. *Ginebra.*

Also known as Schiedam, Geneva, or Dutch Gin. These are all rich, soft, oily, mellow, and aromatised varieties of gin. The best is made at Schiedam, in Holland, and exported to this country both in cask and in old-fashioned, dark-coloured square bottles, which are usually packed in cases with hemp husks. Hollands gin is generally made from two parts of the best unmalted rye, one part of malted bigg, ground to a coarse meal and highly flavoured during rectification with juniper berries. The distillers most noted for Hollands add a little pure Strasburg turpentine and a handful or two of hops to the spirit along with the juniper berries before rectification.

At Rotterdam sweet fennel seed is commonly added, while at Weesoppe, Strasburg turpentine and fennel seeds or essential oil of fennel, are often substituted for a large portion of the juniper berries.

To see Dutchmen absorb Genièvre visitors to Amsterdam should look in at the grand café "*Kratznapolski*" between 5 and 8 p.m. and see the long ranges of tables crowded with customers, smoking their cigars, and methodically and slowly sipping their "Schnaps" (strength 40 to 50°), adding a little white powdered sugar, but not water. The sight, the smoke

and the noise would never be forgotten.

But Schiedam is the metropolis of production, the Mecca of the Dutchman, and the birthplace of his beloved "Schnaps"!

The omniverous distilleries of that little town take with equal relish whole cargoes of rye and buckwheat from Russia, and damaged rice or any cereal from other countries, as well as potato spirit from Hamburg.

A manufactory for "Hollands" was started some years ago at Maidstone, in Kent, but it only languished a few years, and ended in bankruptcy.

Hollands gin when genuine is considered superior to English gin, and is said to owe much of its peculiar flavour to the different way in which it is made, the malt, juniper berries, sugar, and flavouring ingredients, all being mixed and fermented together before the distillation is effected—whereas this is not allowed in England.

Plymouth gin somewhat closely resembles "Hollands," but Schiedam Hollands, usually six overproof, are considered the best, then come those of Rotterdam, and after these, Weesoppe Hollands. Concentrated flavouring essences for making these gins are sold by wholesale druggists, etc.

Holloway's Ointment. — The original formula of *Albinolo's Ointment*, of which this pretends to be a reproduction, contained "serpent and viper grease" and other similar curiosities. The principal ingredients, however, in *Holloway's Ointment* of the present day are more homely substances, and a few years ago, in France, where the sale of such secret remedies is prohibited, it was analysed by the authorised Government chemist, and was found to contain "butter, lard, Venice turpentine, white wax, yellow wax, and nothing else." In a letter to *The Times*, Mr. Holloway afterwards stated that this French analysis was incorrect. It has, however, often been noticed that no two samples of the "ointment" are precisely of the same colour or consistence.

Holloway's Pills.— These have been examined, and said to consist of aloes, 4 parts; jalap, ginger, and myrrh, of each 2 parts; made into a mass with mucilage, and divided into 2-grain pills, of which about 4 dozen are put into a 1/1½ box. Another analyst says 144 pills contain 62 grains of aloes, 27 grains of rhubarb, 3 grains of saffron, 3 grains of Glauber's salts, and 7 grains of pepper.

It is said that these famous pills were the result of a recipe given by an old German woman to the late Mr. Thomas Holloway's mother. They were a failure at first, and their youthful manufacturer was thrown into prison for debt. When he got out he started a shop in the Strand, began advertising, and never looked back.

Holly.—(See page 232.)

Holy Oil. — Oil blessed for ritual use in the Primitive Church, and still used in the Roman Catholic and Greek churches. There are three kinds:—*Oil of Catechumens*, used to anoint candidates before baptism; *Oil of Chrism*, a compound of oil with balsam or with wine and aromatics, used at baptism, confirmation, coronation of sovereigns, etc.; *Oil of the Sick*, used at the unction of the sick, and which (in the Greek Church) has been in contact with a relic or other sacred object, or has been taken from a church lamp.

Hominy, Corn Grits, etc. — A popular American food made from white Indian corn or maize.

The name is from *Auhuminea*, the North American Indian word for *parched corn.*

The maize is hulled and split and more or less coarsely ground and sifted. It is afterwards prepared for the table by adding milk or water, and boiling, when it may be formed into excellent puddings, cakes, or a summer porridge, and is not so heating as oatmeal. It is a very cheap article and highly esteemed throughout the United States. In England it is

usually retailed in 5lb. linen bags at 9d. to 1/- each.

Homœopathic Cocoa. — A name originally obtained by Epps's Cocoa, simply because of Mr. Epps, the manufacturer, being a well-known homœopathist—in fact, the first Homœopathic Chemist established in this country.

The name has, however, since been appropriated by other manufacturers of cocoa, who, ridiculously enough, have not the remotest connection with homœopathy.

Hones, Rag, or **Whetstones** (see also *Oilstone*) are pieces of smooth-surfaced stones, used for sharpening implements, tools, cutlery, and instruments that require a delicate edge. There are several kinds, the finer of which are a sort of silicious slate, and when used are moistened with oil or water. The *Staffordshire Oilstone* is a popular whetstone, and to prevent it being broken it is usually set in a piece of wood and provided with a wooden lid to keep off dust and dirt.

Turkey-stone, or hone, imported from Turkey, is of a greenish colour and a coarse grain, and best adapted for carpenters' tools, common knives, etc. The finer varieties are often called Turkey slate.

The *German Hone* is a softish yellow stone of a finer grit, obtained from the slate mountains near Ratisbon, and used chiefly for razors, surgical instruments, etc. Both the latter kinds have a smaller grain and more compact texture than the British whetstone. Ragstone is a provincial word for any hard, coarse-textured rock.

Honey.—Da. *Honning;* Du. and G. *Honig;* F. and Sp. *Miel;* It. *Miele;* Per. *Shahud;* Port. and W. *Mel;* Rus. *Meod;* Sw. *Haning.*

Honey was doubtless the first sweet substance known to the human race, for the bees had learned how to store up the nectar of the flowers long before man devised means of gathering the maple sap, or of expressing the sweet juices of the sugar cane or beetroot, and reducing them by evaporation. Commercial honey is the well-known thick nectar or vegetable juice extracted from flowers, and consists principally of a mixture of two sugars, dextrose and lævulose, in slightly varying, but nearly equal proportions.

It is produced by plants, not by bees; these useful little insects only gather and store it. Ordinary commercial honey is collected and stored by only one particular species of bee, *Apis mellifica*, although several other insects produce syrups nearly similar. Honey belongs to the carbonaceous foods, that is, to the same group as sugars, starches, hydrogen, and oxygen, with a trifling amount of colouring matter, flavouring substance, and water; but the bulk of all honey is sugar. It differs materially in flavour and quality according to the flowers from which it is drawn, the state of the weather when made, and the age of the bees.

Recent statistics show that the production of honey in Europe is about 80,000 tons annually and in the United States 30,000. England, although often compared to a "*hive*"—so busy are most of those who live in it—does not gather half the honey she requires, but imports about 1,000 tons a year, chiefly from Chili, Peru, St. Domingo, Cuba, and California, but honey also comes from Australia, West Indies, Canada, France, Italy, and Germany.

The best is the *Virgin Comb Honey*, which flows spontaneously from the comb taken from a young hive which has not swarmed, its white cells being whiter and better than that of succeeding years, when the cells have grown brown or even black. *Clover Honey* is usually a clear liquid, of greenish white colour, and may be run out of the comb without destroying it. *Heather Honey* has a rich amber shade and is somewhat viscid. Very sweet flowers give honey a pleasant smell and taste; while others of a poisonous nature, such as the *azalea*, *rhododendron*, etc., impart their properties to the honey, which, while not injurious to the bees are very dangerous to human beings. The hemlock of the Levant, for instance (*Cocculus suberosus*), renders the honey of Asia Minor very sweet but dangerously poisonous. Trebizond honeys in Asia are

frequently of this nature. The elm, broom, euphorbium, arbutus, and box yield bad honey. Bees often fill their cells with molasses, the juices of fruits, and the honey dew or sticky liquid off the leaves of the lime and other trees, and the honey is then very inferior. As a rule, Mountain honey is the best and whitest. Bees are supposed to suck a million flowers to make a pound of honey, and they require 11lbs. of honey to enable them to secrete 1lb. of wax. An abundant supply of wild thyme is said to be essential in the production of the best honey. Honey is composed chiefly of uncrystallisable or grape sugar, wax, gum, pollen, manna, and other vegetable or odoriferous substances and juices; but as it acquires more age the crystallisable sugar augments, a tendency which is increased by exposure to light and air. The most popular sorts are the Minorca, the Narbonne, the Gâtinais, the Chamounix, the Cretian, and the English, while large quantities are imported from Chili and the large bee farms of California.

Statistics show that Germany has 1,910,000 hives, producing 45,000,000lbs. of honey every year; Spain has 1,690,000 hives, producing 42,000,000lbs. of honey; in Austria there are 1,555,000 hives, producing 40,000,000lbs. of honey; in France, 950,000 hives, producing 22,000,000lbs.; in Holland, 240,000 hives, producing 6,000,000lbs.; in Russia, 110,000 hives, producing 2,000,000lbs.; in Denmark, 90,000 hives, producing the same; in Belgium, 200,000 hives, producing 5,000,000lbs.; in Greece, 30,000 hives, producing 3,000,000lbs. The annual production of honey in Europe is calculated to reach 80,000 tons, valued at £4,200,000, and of wax, 15,000 tons of the value of £1,350,000. A hive of bees produces from 20 to 50lbs. of honey yearly, according to the size of the hive, and multiplies ten-fold in five years. M. Bertrand, the famous French bee-keeper, has large hives containing 26 frames in each. In order to obtain enough honey for a load, a bee requires to visit 6,000 different flowers, and makes on an average 20 trips daily.

The United States crop exceeds 60,000,000lbs. from 2,800,000 hives. The largest bee-keeper is Mr. Harbicon, in California, who has 6,000 hives yielding about 200,000lbs. annually; but one of the largest beehives in the world is probably that at Beer Rock, California. The rock is, in fact, itself the hive. It is a granite boulder, rising abruptly from the bed of a little affluent of the Arroyo Alcade, and it is seamed and scored with fissures of divers sizes, whose depths have never been sounded. They are all inhabited by a vast population of bees, and overflow with honey. It is impossible to estimate the quantity stored in the hidden recesses, and it is needless to say that nobody would be bold enough to explore them. It is not without considerable peril that honey hunters rifle the bees of that which appears at the edge of and outside the fissures, and that comes to many hundred pounds' weight every year; but perhaps the biggest bee hive in the world is a natural one in Kentucky, known as the "Mammoth Bee-hive." It is in reality a huge cave, the main compartment of which is 150 feet high, the floor covering 10 acres in extent. The hive also is of solid rock, the roof having been entirely honeycombed by bees.

Honey always takes its flavour from the flowers. Crete, Minorca, and Narbonne honeys derive their flavour from rosemary; that from Provence from lavender, and that from Naples, Valence, and Cuba from orange flowers.

Honey obtained from heath blossom is generally yellow, bitter, and syrupy. Corsican, being gathered chiefly from box-tree flowers, is also very bitter, and so is Sardinian honey. The latter is used largely in absinth manufacture.

In Brittany the honey got from buck wheat is generally very brown, and leaves a very disagreeable after-taste. The bees of Bourbon, or Réunion produce greenish honey, which retains the perfume of the flowers of the *Acacia heterophylla*.

The mountain honey of Chamounix, of greyish colour, is extracted from various Alpine plants, and justly celebrated for its exquisite flavour.

The bees of Mount Hybla, in Sicily, have only thyme to feed on. The white liquid honey of Mount Hymetta, in Greece, owes its exquisite flavour and transparency to the *Labiatæ*, which cover that mountain; that of Southern India to the *Strobilanthus*.

As already shown, Virgin Honey is the best; the second in quality is *White Honey*, got out of the combs first by slightly cutting or bruising the cells, and hanging them up, when the honey drips out and is drained through a coarse cloth, and soon assumes a thick, white, and almost solid substance. Subsequent pressure draws forth a third quality, and a fourth of darker colour is obtained by slightly warming the combs. Honey in a clear state sells best, and that which becomes crystallised and thick by long keeping should be warmed very slowly to about 80 to 90 degrees, but not higher, or the flavour will suffer. It is often rudely spoiled by being melted down rapidly and strained. It would clarify itself if stored in a warmer place and left alone a few days or weeks.

If wanted to "set" put it in a cooler place. If wanted to be kept in a liquid state, which is far the best, keep it in a warm, dry place.

As a food honey eaten in moderation is said to be nutritive and mildly laxative. It is used by tobacco manufacturers to add sweetness, flavour, and perhaps weight to certain kinds, and in medicine it is an important demulcent, a flavouring agent in syrups, gargles, pill-masses, and mixtures. Honey, both strained and comb, is commonly adulterated with starch syrup. This syrup is first made from potato starch and oil of vitriol. It is then mixed with a little genuine honey, but it lacks sweetness, and taste is the readiest test. It is often adulterated with glucose, sugar, syrups, treacle, and with starch flour; the latter may be discovered by mixing in a little warm water, which dissolves the honey but not the flour. Artificial honey has recently become an important by-product of the German beet-root sugar distilleries.

Imitation honey is often wholly made from corn-syrup or starch-sugar, a cheap, crude material obtained from potatoes and sulphuric acid, or from maize, or even from rags, and sulphuric acid. More frequently it is made of glucose and dextrine. A simple method of testing what is pure and what is artificial honey is to add a little pure alcohol to it, dissolved in an equal volume of water. This solution, on being shaken up with alcohol, remains nearly clear in the case of honey, but in the case of the imitation it at once becomes opaque like dirty milk, due to the deposition of dextrine from the starch-sugar.

A patent for making a Honey substitute from beet sugar glucose and water was actually taken out by Mr. Charles Lyle and his chemist, Mr. Eastick, in 1885, but such a product has really no right to the name of honey.

English honey is chiefly collected from furze and broom flowers, and is more waxy than that from the South of Europe. American or Californian and Swiss honeys are mostly adulterated with corn or starch syrup.

Clarified Honey, also called *Refined Honey* or *Strained Honey*, is less agreeable to the taste than raw honey, but it is less liable to ferment. How to clarify:—Mix 1 cwt. honey with 9 gallons water, add 7lbs. animal charcoal; simmer for 15 minutes (add a little chalk to saturate any free acid), strain well, and finally evaporate to consistency desired.

Honey when too dark in colour may also be decolourised by gently warming it with granular animal charcoal and filtering while hot through a layer of the same substance in a cylindrical percolator.

Vague titles, like *Swiss Honey*, *Honey-dew*, *Refined Honey*, *Table Honey* (*prepared for table use*), or *Finest Prepared Table Honey* are often applied to adulterated preparations. *Clarified Honey* is prepared by melting in a water bath and removing the scum and straining it while hot through flannel, and this is the kind generally used medicinally. *Sugar Honey* is an imitation of or a

substitute for natural honey. It is a kind of *syrup* composed of water and inverted sugar, a little mineral substance, and a little free acid. It has the taste and smell of the natural product, and, as far as known, is without any element not contained in genuine bees' honey.

Another imitation, known as sugar honey can be easily obtained by the two following operations:—(*a*) Inversion of normal sugar by *pure* sulphuric acid, which is most easy. Normal sugar is dissolved in five to six times its weight of water, previously made acid to $\frac{1}{2000}$ or $\frac{1}{1000}$ by sulphuric acid; the solution is boiled during five minutes and the inversion is produced. The sulphuric acid is eliminated by means of pure carbonate of baryta, of which a very slight excess is beneficial. It is filtered and evaporated either in the air, or, better still, in a vacuum. If the evaporation is made in the air an invert sugar is obtained exactly similar to that of the best natural honeys, but more or less brownish yellow in colour. But in a vacuum a colourless honey is obtained, or almost colourless, according to the quality of normal sugar employed. Refined sugars or candies give such, the refined at least as well as colourless candies.

Sugar honey thus prepared differs in nowise from the natural sugar gathered by the bees; but it differs from honey in this, that it has not got the special odour of the flowers; the chemist has not got the wings of bees, and does not go like them to gather the sugar and scent. He is compelled to *borrow* this perfume from them, of which he may manage to make an exact imitation, but not without great expense and methods not perhaps quite free from danger.

If 2lbs. of natural bees' honey be added to every 100lbs. of the above, a very fair article is undoubtedly produced.

For *Honey-Water*, see *Mead*.

The extreme suitability of climate and flora for bee-farming purposes in New South Wales is leading to a steady annual increase of honey production in that colony, with the result that efforts are being persistently made, and not unsuccessfully, to include honey among the more important articles of Australian export. The bee farms are to be found in many portions of the colony, several of the largest being in the Blue Mountain and Western districts. Among these latter is one near Orange, which affords an interesting example of the manner in which the Australian bee-farming industry is conducted. The country for some distance back from the farm is still a forest, in which a large portion of the trees are red gum, the others being principally box trees. The red gums are the main dependence of the bee-keeper, though the box gives a fair supply of honey. Recently increased attention has been given to the best methods of honey production, the bee farmers in New South Wales being sufficiently numerous to support a monthly paper, the *Australian Bee Bulletin*, and to hold occasional conferences for the purpose of discussing matters affecting the bee-farming industry. The experimental shipments of Australian honey to London have been watched with much interest. Some recently sent from Sydney arrived in excellent condition, not having suffered from the intense heat of the Red Sea. Should Australian honey find a good place in the British market, there is practically no limit to its production, the colony being capable of producing many millions of pounds annually.

Brazilian Honey is chiefly employed in medicines. In some districts of the River Plate, a kind of honey made by a very small bee is called *Alpamisqua*.

For *Ethiopian Honey*, see *Tazma*.

Honey is largely used in pharmacy, also in making gingerbread, as well as certain sweets and fermented liquors. It should be chosen light-coloured and new. If kept too long it crystallises and loses flavour, although "candying" is one of the best proofs of its purity.

Comb honey and how to handle it.—You must not drop it. Hold it only by the wood, and when removing it from the crate, or at any other time, do not break the delicate cappings covering the cell, otherwise the honey will run out. Where to keep it—in a warm, dry room, say, 80° or 90° F. No place too warm in

which a person can live. Never put it in a cellar, as honey will draw dampness and cause the cappings to break and the honey to leak and turn rancid. "Honey in the comb" has sometimes been artificially made—the comb from paraffin wax and the imitation cells filled with glucose.

Special Firms.—Kimpton Brothers, 36 and 37 Mincing Lane, London, E.C.; John Parkes & Co., Priory Works, Warwick; Geo. Rose (Finest English Honey), 50 Great Charlotte Street, Liverpool, and branches; C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Honey Dew Tobacco.—The commercial name for a kind of chewing tobacco which has been moistened and prepared with molasses.

Honey Soap rarely has any honey in it, although strictly it should contain about 1 oz. of honey in each pound of soap. It is mostly made 3 parts of curd soap, 1 part palm oil soap, and 1 part olive oil soap, melted together and scented with oil of citronella, verbena, ginger-grass, or rosemary.

Some makes consist of 7lbs. finest yellow soap melted with ¼lb. olive oil and similarly perfumed. Many of the so-called Honey Soaps owe their texture to extensive pearl-ashing, and consequently contain an injurious amount of free alkali.

Honig Tea consists of the dried stalks and leaves of the shrub *Cyclopia genistoides*. It has a pleasant aroma and an agreeable astringent flavour. Used in Africa.

Hoola Kins.—See *Eulachon Fish* and *Oil*.

Hop Ale.—Hop Ale is made in a similar manner to ginger-beer. Dissolve 8lbs. of moist sugar in 8 gallons of water, to this add a mixture of tr. lupuli zij. and tr. chiratæ ziss., with 20 drops of essence of pineapple. Float a slice of toast upon the liquor, and pour upon it 4 ozs. of fresh yeast. Ferment at a temperature of 70° to 80° F. for a day, strain and bottle. The colour may be brought up with caramel, or a part of the sugar may be replaced by treacle.

Most Hop Ales are really fermented light ales, and are non-alcoholic in the Excise sense only, that is, they contain about 2 per cent. of proof spirit. Fermentation of the mash appears to be stopped at a certain point, then the clear ale is slightly carbonated, and salicylic acid or other preservative added. (See *Non-alcoholic Beers*.)

Hop Bitters.—Intended to be used as a tonic.

(1) Soak an ounce of hops in a pint of boiling water, leave them two hours, then strain. Dose: About a wine-glass of this filled up with water. For bottling to keep, add a small quantity of spirits. These bitters are sedative, but not narcotic, and are perfectly harmless, also considered more valuable than gentian, chamomiles, etc.

(2) Concentrated solution of chamomile, 3 ozs.; concentrated infusion of buchu, 2 ozs.; concentrated infusion of hops, 8 ozs.; concentrated infusion of gentian, 3 ozs.; glycerin, 3 ozs.; mix with water recently boiled and cooled, so as to make up to 48 fluid ozs.

Hopkos.—See *Temperance Drinks*.

Hops.—Da. and Sw. *Humle;* Du. *Hoppen;* F. *Houblon;* G. *Hopfen;* It. *Lupolo;* Port. and Sp. *Lupulo;* W. *Pensag*.

The ripened catkins, flowers, or seed cones of the hop-plant, of which there is only one species, *Humulus lupulus*, a perennial climbing vine, growing luxuriously three or four together up hop poles some 12 or 20 feet high, and yielding the bitter principle, known as *Lupulin*. Hops first came to England from Artois about 1524; but were in use 2000 B.C. in the dual capacity of an intoxicating beverage and as a medicine. This is attested by pictures of the plant on Egyptian monuments of that date. Although increasing in consumption, the area of hop cultivation in this country has latterly been declining. The annual consumption is at least 650,000 cwts., while the home crop yields little more than half that quantity, the remainder

being imported from the Continent and America. The present acreage in England is only about 58,000, viz., 35,000 in Kent, 7,000 in Sussex, 6,000 in Hereford, and 2,000 to 3,000 each in Worcester, Hants, and Surrey. The Kentish crop of course "makes the year," but the cultivation in that county has fallen off, while in Hampshire, Hereford, Shropshire, Worcester, and also in Sussex it has been increasing these last few years. The best varieties are known as *Hill Golding*, *East Kent Golding*, *Golden Hops*, *Jones's Hops*, *Grape Hops*, and *Farnham White Bine*.

HOPS.

The Goldings are very fine and rich. Jones's are of shorter growth and do not require such long poles. The *Colegates* and *Grape Hops* are hardy and prolific on even poor soils.

The best *White Bines* are grown at Farnham, in Surrey, and the next at Canterbury, in Kent, and yield 2 cwts. to 20 cwts per acre. The hops are ripe when the flowers turn a brown amber colour, and the plant is then severed near the root and removed with the pole, which is laid down on wooden frames, and the cones are then picked off by women and children. The lighter coloured and finest of these are picked, dried in a kiln, and packed in pockets of 1½ cwt. each for ale brewers; the darker and inferior qualities in bags of about double the weight of pockets for porter brewers. Mid-Kent and Sussex hops have an inferior colour and flavour. *Red Hops* used to be considered very fine and aromatic, but the *white* varieties are now more in favour both for flavour and general brewing qualities.

A variety known as the "Meopham" has during the last few years been somewhat largely cultivated in the Weald of Kent and Sussex, but although a hardy heavy cropper and early ripener, it is only poor in quality. The roughest bined hop of all is the *Colegate*, which can easily be distinguished by this, both in the hop garden and when cured and bagged.

The best hops may be known by the tight packing and perfect dryness of the unbroken cones, and the clammy feeling of the powder contained in them; also by their flavour, scent, thickness, and bright colour. As a rule they are also small and compact in the cone, while the coarser sorts are larger and loosely set on the string. The great hop market in England is the Hop Exchange, Southwark Street, London. The prices of hops depend both on the yield, whether 2 or 20 cwts. to the acre, and on the season, whether wet or dry, also on the extent of the ravages of the aphis blight, drought, red spider, and mould. They fluctuate from £2 to £20 per cwt.

If properly preserved the produce of a good season may be profitably held over for years of scarcity. When hops are older than of last season's growth they are termed "yearlings," when of second season's growth, "old," and when three years or older, "old odds."

There are no authentic documents to prove where hops were first grown, but eminent botanists like Linnæus and De Candolle entertain the opinion that the plant originated in Eastern Russia. Etymologists also affirm that all European languages have derived their designation for hops from the Slavic word

"*Chmel*," which means *hops*, and there exists evidence to prove that the Slavs were the first to add hops to their beer. As above stated they reached England from Germany about 1524, and are used for imparting to beers an aromatic bitterness, brightness, and clearness, and to prevent souring. (See *Ales*.)

They soon lose much of their strength and fine flavour if not kept properly, and no brewer who knows his business will buy slack dried or cold bagged hops, except for immediate use.

It has been ascertained that hops contain two kinds of resin which have certain preservative powers. The harder one is better than the soft or *oleo* resin, and Bavarian growths possess twice as much of this preservative power as the English, although the latter are far superior in flavour. Germany exports to this country large quantities of Bohemian and Bavarian hops, but some of them are occasionally found to be repacks of Russian growth. About 30,000 cwts of Russian hops come yearly to England, but most of them are much inferior to Bavarian. There is, however, one kind of Russian raised from the best Bohemian (Saaz) and Bavarian (Spalter) sets of plants, which is equal to the best known brands in the market, and at the same time very much cheaper. Bohemia cultivates some 26,000 acres—chiefly red hops—which yield about 9,000,000lbs. yearly, and the kind with greenish-yellow flowers, grown in the Saaz or Saaltz district, and known as *Stadt*, or City hops, are considered the best in the world. The flowers are long, closed at top, and contain 100 to 150 leaflets, very soft and velvety to the touch. When ripe they assume a red tint, but possess a very spicy aroma, and are very bitter. *Auscha* is another hop producing district in Bohemia; quality somewhat inferior, but large quantities are sent to England and to Scandinavia. *Bezirks* and *Kreis* are lower grades, especially the latter. *Daubo* hops are a green variety with round flowers of only 40 to 60 leaflets. *Raconitz* produces fine hops, almost equal to the Saaltz. In Persia hops grow wild in the jungle and thickets lining the main roads about Resht, but no use is even now made of them, and they are not collected. Alsace also produces hops. In the United States, California is the chief producing State.

In addition to their primary use in brewing, hops are sometimes used for making pillows to cure neuralgia and to induce sleep, but should first be carefully broken up by hand, and thoroughly dried before the fire. They are also occasionally employed in making poultices and hot fomentations for gout, rheumatic affections, bruises, etc., and considered an excellent remedy.

A new use is reported to have been discovered for hops—namely, the curing of bacon. It is found that a sprinkling of hops in the brine when bacon and hams are put in pickle adds greatly to the flavour of both, and enables them to be kept an indefinite period.

Horehound (sometimes spelt *Hoarhound*).—A small cottony herbaceous plant, *Marrubium vulgare*, largely grown in California, frequently cultivated, or perhaps tolerated, in English gardens, but more often growing wild on waysides, waste ground, old walls, etc.

HOREHOUND.

It usually grows 12 to 18 inches high, has several small branches and bushy

wrinkled leaves, while the flowers are white and crowded at the axils of the leaves, the whole being covered with a white cottony down. This herb, like many others, used to have in old times a host of virtues which might turn the patent medicine vendor of to-day green with envy!

Horehound has an aromatic, but not very pleasant smell, and is much used to flavour honey, as a reemdy for coughs and colds, as also is *Syrup of Horehound*, a mixture of horehound juice and sugar.

Hors d'Œuvres.—A French term used in bills of fare by caterers for small *side dishes*, or savoury "whets" for the appetite. In Russia called "*Zakuska.*"

Horse Chestnuts.—(See also *Chestnuts.*)—The nuts or fruit of the highly ornamental horse-chestnut tree, *Æsculus hippocastanum.* Removed from their three-lobed prickly capsule the seeds—one or two in number—resemble the ordinary edible chestnut, and although very coarse and bitter, a flour called *Polenta* is made from it on the Continent. The tree has a magnificent foliage and blossom. The bark is used as a febrifuge, but the timber is of little value.

The vessels of the leaf-stalk are arranged in the shape of a horse. The nuts are also supposed to be beneficial in some diseases of the horse.

Large and coarse things have often the prefix "horse" attached them.

Horse Flesh as Human Food.—The consumption of horse flesh is, perhaps, greatest in Germany, but it is also very common in France. In 1892, in Berlin, 8,182 horses were slaughtered for the butchers' shops; in Breslau, 3,431; in Hamburg, 1,727; Dresden, 1,428; Cologne, 1,415; Hanover, 1,400; Madgeburg, 1,193; Leipzig, 1,053; and in some of the smaller towns the proportions are greater. The greater part of it is consumed by the poorer classes, and in the "People's kitchens," which aim at supplying substantial soups, sausages, bouilli, etc., at lowest prices.

Horseflesh also appears to hold its own as an article of food with the poorer classes in France and Belgium. Recent statistics showed that in Antwerp alone nearly 4,000 horses were slaughtered in 1896 for human consumption, and the number of shops dealing exclusively in horseflesh in the Belgian port exceeds thirty. Over 10,000 horses were imported into that country during the year for conversion into meat, this number being largely in excess of the imports of cattle. Ghent alone received about 5,000 used-up animals from London.

This inexpensive article of diet is by no means despised by the labouring classes in that country. English-speaking people, on the contrary, nowhere exhibit any tendency to hippophagy.

Horse Mackerel.—See *Tunny Fish.*

Horse-radish.—Da. *Peberrod;* Du. *Rammenas;* F. *Rave, Raifort;* G. *Meer-rettig;* It. *Rafano;* Port. *Rabao;* R. *Khrèn;* Sp. *Rábano picante;* Sw. *Pepparrot;* W. *Rhuddygl y meirch.*

The pungent and stimulating root of the perennial herbaceous plant *Cochlearia armoracia*, a species of scurvy-grass.

It is mentioned in the Egyptian records as a medicine and condiment 2,000 years B.C. This root contains a volatile oil very similar to mustard oil, with about 30 per cent. of sulphur, and is one of the most effective anti-scorbutics known. Horse-radish provokes the appetite, and aids digestion; it is usually scraped raw and used as an accompaniment to roast beef, both as a condiment and garnish, the taste of it being warm and pungent like mustard. Considerable quantities of horse-radish are imported from Holland and Germany in large casks. The root is at its prime at one year's growth, but the Dutch, although very cheap, are often three years old, being grown from "jags" or "snags" (small thin rootlets), and, although large and plump, are tough and almost tasteless. They may be known by the forked

rootlets at the bottom of the stick and their dirty sandy colour, and they often show a little leaf, grown and bleached in the barrel.

The English growths are small and rugged, but far the best in pungency and flavour, and are cut straight off with the spade, also without roots at the end of the stick, but a small green tuft just beginning to grow on the crown.

The poisonous roots of Monkshood, or Wolfsbane (aconite root), are occasionally mistaken for horse-radish. These poisonous roots are short—only 1 to 3 inches long—and tapering to a point, seldom being thicker at the crown than a person's finger; they are also covered with a blackish or nut-brown skin, have a bitter, earthy taste, and disagreeable odour, producing on the tongue, if a minute portion be cautiously chewed, a prolonged tingling and a sensation of numbness; while the edible horse-radish roots have longer lengths, say 7 to 10 inches, and are of more even thickness from end to end; the skin also is cream coloured or yellowy-white. There are very few branches to the root, and it is marked with a few transverse scars. When bruised and wetted it gives off a pungent odour. Horse-radish is in season from October to June, but may be kept fresh a long time in sand and in a cool place.

Horse-radish Powder is usually prepared by taking up the roots in November or December, carefully drying with a gentle heat. After being reduced to powder it is corked in bottles, say 6 oz. size, to retail at 9d. to 1/- each.

Horseradish, as above observed, is highly stimulant, exciting the stomach when swallowed, and promoting the secretions, especially that of urine. Externally it is rubefacient. Its chief use is as a condiment to promote appetite and invigorate digestion; but it is also occasionally employed in medicine, particularly in dropsy attended with enfeebled digestion and general debility. It has, moreover, been recommnded in palsy and chronic rheumatism, both as an internal and an external remedy, and in scorbutic affections is highly esteemed.

A great number of horse-radish condiments have been put on the market from time to time, but *Bayle's Horse-radish Mustard*," prepared at St. Louis, is a general favourite throughout the United States, and is bound to become more widely known year after year, for, although not often seen in England, where there are older preparations, it is unquestionably superior to any in purity and dietetic excellence.

Horse-radish Sauce.—F. *Sauce Raifort à la Crême;* G. *Meerrettisch-Sauce.*

This is very cheaply made. Mix about four tablespoonfuls of finely-grated horse-radish with a teaspoonful of white sugar, 1 oz. of salt, half a teaspoonful of ground white pepper, and two teaspoonfuls of ground mustard. Then add sufficient vinegar to bring to the consistency of cream. Bottle, and cork well. It often consists of grated horse-radish and strong vinegar only. (See also *Sauces.*)

Horse-radish sauce is served with either hot roast beef or mutton, also made by scraping about 2 ozs. of horse-radish. Stir it into half a pint of cream made boiling hot, add 1 oz. of fine white bread crumbs, a little milk, a pinch of cayenne pepper, same of salt, and just before taking to table stir in the juice of half a fresh lemon.

Horse-radish Tree.—A common name for the *Moringa pterygosperma*, a tree common in many parts of India, and cultivated in several other tropical countries. The fruit may be eaten fresh as a vegetable or pickled. Its seeds furnish the *Oil of Ben*, used by watchmakers. The bark supplies a gum like *tragacanth*, and the leaves are used in *curries* and as sinapisms; and although the horse-radish tree is no relation to the familiar English horse-radish plant, yet its fresh roots

have a pungent odour and a warm taste.

Horse-radish Vinegar.—Pour a quart of best vinegar on 3 ozs. of scraped horse-radish, 1 oz. of minced shalot, and 1 drm. of cayenne; let it stand a week, and you will have an excellent relish for cold beef, salads, etc., costing scarcely anything. Horse-radish is in the highest perfection about November. (See also *Vinegar*.)

Hosika.—A name in Japan for dried sardines, which are used extensively for manure.

Hot Cross Buns.—See page 151.

Hotch-potch or **Hodge-Podge.**—This famous Scottish dish, formerly called "*Salmagundi*," is a kind of mutton broth or vegetarian soup, and usually consists of green peas (not pearl barley), cabbage, carrots, turnips, onions, parsley, and other herbs, all chopped or grated fine, and then boiled in water, with neck or back ribs of mutton, for about two hours; a little butter, salt, and pepper are added; and lettuce, celery, white cabbage sliced, asparagus points, etc., are often used. Sometimes the mutton is cut up in pieces and sometimes left in a lump to be sliced up at table as the soup is served. Some boil the empty hulls, swads, or shells of the peas in a little water, and add the strained liquor to the rest. Hotch-potch is considered the *chef d'œuvre* of Scotch cookery.

Hottentots' Tea.—This consists of the leaves of one or more species of Helichrysum, a large genus of composite plants cultivated in South Africa. The flowers are yellow, and commonly known as everlasting, or immortelles. The beverage has a very agreeable aroma, and is highly appreciated by the natives.

Hovis Bread.—The special peculiarity of this patent brown bread seems to be that the flour from which it is prepared is mixed wih the ground germ or embryo of the wheat grain. In making the bread, kneading or moulding must be avoided, and it must be baked rather longer than ordinary bread.

Huckleberries.—A general name in the United States for several species of heather berries. (See *Whortleberries*.)

Hugon's "Atora" Refined Beef Suet.—Made from fresh English beef suet only, by Hugon's process. Absolutely pure; saves trouble of chopping; used for puddings, pie-crust, cakes, frying, and cooking generally. Remains sweet an indefinite time; and being free from skin, tissues, and moisture, goes twice as far as raw suet.

Huile d'Enfer, Huile de Nice, Huile de Provence.—See *Olive Oil*.

Hulled Corn.—A preparation of whole grains of Indian corn, or maize, for food; made by maceration in a weak lye, to remove the hulls, or husks, and subsequently cleansing and thoroughly boiling in milk.

Humanised Milk.—(See also *Milk*, *Condensed Milk*, *Cream*, etc.)—To render cows' milk more like human milk for infants' use we have humanised condensed milks. In these preparations human milk is imitated by condensing cows' milk to one-third its bulk, and adding cream and a saturated solution of milk-sugar to bring the mixture to the required composition. For children some of the highest authorities say that the best substitute for mothers' milk is cows' milk, diluted with one-fifth of its weight of hot water, and with a little sugar and salt added. It is very essential for infants that their food should always be fresh.

Hungarian Wines.—The most commonly met with are:—Oedenburger, Samlauer, Neszmely, Carlowitz, and Erlauer. Carlowitz is the best known.

The *White Wines* comprise Miszla, Balaton, Füred, Hont, Pesth, Weissenburger; and the *Red Wines* Baranya, Presburger, Somogy, Vagh-Ujhelyer, Paulitsch, and Erdröd.

Gratz, in Styria, also produces champagnes, burgundies, hocks, and clarets.

Maszlac is of four different kinds. Meograd, Krasso, and Villany, produced in the West of Hungary, are good strong wines of the second class. The varieties known as Ausbrach and Maszlacs, as well as the Tokays, Rust Menes, etc., are considered the best. There is also a large number of inferior qualities.

Hung Beef.—(See p. 95, also *Corned Beef, Tasajo.*) — This is preserved by salting, and drying either with or without smoke. It is first hung three or four days till tender, then salted with brine, bay salt, brown sugar, saltpetre, and a little pepper and allspice. It is afterwards rolled tight in a cloth and hung in a warm dry place for two or three weeks till hard. If smoked at this stage it will keep a long time.

Scotch Beef-Ham is the flesh of bovine animals, and now generally limited to that of the ox, cow, or bullock. Before the days of fresh-meat markets and railways it was customary for families, especially in the country, to lay in stocks of salt beef in October or November to last till the following summer. Glasgow has long been famous for its boiled beef-hams, and considerable quantities are still prepared in Scotland, and sent ready cooked to retail provision dealers in most large towns. Cork also exports salt beef to the East and West Indies.

Hunyadi Janos. — A registered brand of natural mineral water produced in Hungary, from wells sunk by Mr. Andreas Saxlehner in 1864 at some springs near Buda Pesth. It is named after a Hungarian hero who flourished in the 13th century. It is very bitter, and possesses valuable aperient properties, and on analysis appears to be composed of:—

Calcic sulphate ...	0·41
Magnesic do.	16·05
Sodic do.	25·00
Magnesic chloride ...	1·20
Silica	0·12
Water	957·22
	1,000·00

Although some medical authorities, and of course the proprietors of the wells, are of opinion that natural waters cannot be reproduced by artificial means, yet if the salts and gases composing these spa waters be correctly known, there ought not to be much difficulty in our mineral water manufacturers producing them at home, and so rendering it unnecessary either to visit the distant spas or import these foreign waters. In fact, it is said that more of these bottled waters are really manufactured in this country than are imported.

Hurreah. — A spirit used at Chyebana, in the district of Barrackpore.

Hurtleberries or Hurts. — See *Whortleberries.*

Hydroleine, which has been much advertised in American and English papers, and claimed to be very strengthening, contains (according to the statements of the manufacturer) in two teaspoonfuls (120 drops) 30 drops of purest cod-liver oil, 35 drops of distilled water, 6 grains of soluble pancreatine, ⅓ grain of soda, ¼ grain of boracic acid, and 1·20 gr. of glycocholic acid.

Hydromel.— See *Mead.*

Hyson Tea. — (See also *Chinese Teas.*)—*Hyson,* or *Hichun* (literally meaning "blooming spring" or "fair spring"), is a name for certain kinds of green teas of the first crop, and were until lately highly esteemed in this country. The leaves are large and rolled up lengthways, heavy and very brittle, and of a silvery green colour. The infusion is limpid, amber-coloured, and, like all green teas, rather tart. It yields 48 to 50 per cent. of soluble matter; but owing to the artificial and injurious colouring matter with which the Chinese adulterated them, all green teas have gone much out of favour. They are packed in half-chests and boxes, averaging 58lbs. and 17lbs. each.

Young Hyson, or *Hyson Junior*—from Chinese *Yu Tsien* ("before the rains") or *Tu Chun* ("flourishing spring")—means hyson tea picked early, before the rains, while the leaves are small and delicate. This tea contains about 52 per cent. of soluble

matter, and is considered superior to ordinary hyson. Half-chests hold about 65lbs., and boxes 25lbs.

Hyson Skin, the badly rolled, small, or refuse hyson, with discoloured or yellow leaves. It yields only about 43 per cent. of soluble matter, the coarser or rougher being termed *tea-bones*.

Cowslip Hyson is a flavoured sort, made by mixing with it the berries of *Chloranthus*, or by alternate layers of tea and dried and sifted cowslip flowers.

I

Ice.—Da. *Iis;* Du. *Ijs;* F. *Glace;* G. *Eis;* It. *Ghiaccio;* Per. *Yach;* Port. *Gelo, Caramelo;* R. *Leodt;* Sp. *Hielo;* W. *Rhew.*

Ice is now used very extensively for a variety of purposes. In some parts of America there is more money spent in ice than in fuel. Two or three hundred thousand tons a year often come from Norway, and a vast quantity from Boston and other American ports. Its chief value consists in its antiseptic property, and its principal uses are the preservation of articles of food, cooling of liquors, etc., and for medical and other purposes. Large quantities are also regularly used in the larger bacon factories.

Meats and fish are preserved fresh by it more conveniently and efficiently than by any other means, and its largest consumption is in the great markets of our cities. Besides that used in shops, hotels, etc., most of the steam-ships leaving England take 6 or 10 tons aboard.

Vessels at sea need not now, as formerly, depend for fresh meat upon live animals taken on board at great inconvenience, but, by means of a small ice-house, they can preserve their supplies fresh for a considerable voyage and in all climates.

The handiest way of keeping ice for domestic use is by the refrigerator or portable ice-chest, which should be selected with care, for those badly made only assist in melting instead of preserving the ice. When the chest is properly made the temperature can be adjusted at pleasure, while the food, wines, water, and other articles placed in it are most enjoyable in hot, sultry seasons.

There is one precaution necessary to notice, that the use of ice, in any form, must not be pushed too far, so as to lower the temperature of the person unduly, or given when the temperature of the body is already low. Ice is well known to have a powerful effect in stopping inward bleeding, and the pulse in temporary derangements comes down very considerably under the free use of ice-cold milk.

A physician states that ice water does not quench thirst. The most efficient way to allay thirst is to thoroughly rinse the mouth with not more than a tablespoonful of water; this will quench the thirst as effectually as a quart of water hastily swallowed, and will not have any injurious effect. He adds that he believed fully one-third of the deaths during the heated season are, if the truth were known, directly or indirectly due to freely drinking of ice-water.

Iced Milk.—In acute inflammatory diseases, iced cold milk freely used is of the greatest advantage. A small piece of ice, about a square inch, put into a cup of milk, allowed to stand for a time, or stirred for a minute or two, will make a better drink for the patient than water, being nourishing, as well as quenching the thirst.

To break ice tap it with a sharp-pointed metal instrument, similar to a brad-awl but longer; the sharper the point the easier the ice is broken. It may be easily split with a strong needle better than with a hammer.

About 3lbs. of salt mixed with every dozen pounds of ice is very useful to generate a greater degree of cold.

Ice Cream.—F. *Glace à la Crème;* G. *Rahm-Eis;* Port. *Sorvete;* Sp. *Helado, Sorbet.*

Ice creams are made of various qualities, from cream, milk, and sweetened water. Sometimes instead

of cream the ingredients of a custard—egg, cornflour, etc.—are used. A fair quality is produced by whisking 4 eggs, ¼lb. sugar, and 1 oz. fresh butter in a quart of new milk; place the mixture in a pan on the fire and stir well till it nearly boils. Then empty it into "the freezer," adding a little essence (lemon, raspberry, strawberry, or vanilla), and "freeze" in the usual way in a freezing machine. (The handiest and most reliable freezers may be had from Parnall & Sons, Narrow Wine Street, Bristol, who are noted for their ice appliances.) As the mixture freezes, it should be worked down from the sides of the freezer with a wooden spoon or spatula, so as to make the mass of uniform consistence.

A good freezing mixture is also made by mixing one part by weight of powdered sal ammoniac with two parts of powdered nitre; common washing soda is next reduced to a powder, and both are then kept in well-corked bottles ready for use. When wanted, take an equal quantity of each, using sufficient water to dissolve them, and then freeze.

Another:—2 pints new milk, 6 eggs, ¼lb. white sugar; mix, strain, heat to near boiling point, and, when cooled, freeze. (See also *Neapolitan Cream.*)

The apparatus necessary for freezing are the pewter freezer, the ice pail, and wooden spatula.

In actual practice a mixture of 1lb. of rough salt to every 3lbs. of small ice will be found to give the best result.

Another good basis is: 3 pints of new milk, 1 tin best condensed milk, and yolks of 4 eggs.

Mix and heat gently with constant stirring to make a custard. Then cool and put into the freezer, which is packed round with ice and salt. Whirl the freezer round for 5 minutes. Then take off lid and scrape down the frozen ice off the sides. Again whirl and scrape, repeating the process until a uniform butter-like mass results.

The above basis can be flavoured with vanilla, orange, lemon, almond, or any other flavouring.

To make a specially rich ice, substitute raw cream sweetened with sugar for the quantity of milk given above.

Fruit Ices are made by using fruit jams with the above, adding the juice of a lemon to each pound of jam, and then pulping the whole through a sieve before mixing with the custard and freezing (say one part of pulp with two of custard). Tinned pine-apples, cut into small pieces and bruised in a mortar, are often used in this way.

The first mention of *ice cream* found in history is in the account of the festivities in New York following Washington's first inauguration as President of the United States, in 1789, when ice creams were prepared under the direct supervision of Dolly Adams, wife of John Adams, the second president.

Ice Creams.—Mr. John May, of 114 Church Street, Croydon, Surrey, supplies a Desiccated Ice Cream Powder, in various flavours, which simply require the addition of boiling milk, and is specially packed for the grocery and allied trades. Full particulars upon application, including Dr. Goodfellow's report upon the article. Freezing Machines and Wafer Biscuit Moulds also supplied.

Iceland Moss, or **Lichen Islandicus.** — F. *Lichen d'Islande:* G. *Islandische Flechte.*

This is not really a moss, but a true lichen, distinguished as *Cetraria islandica,* which grows two to four feet high on several Icelandic mountain tracks which are otherwise desert. It is largely used in that country for feeding cattle, pigs, etc., and has long been used in England either alone or in conjunction with other ingredients as human food. It is said to be native of Britain, and large quantities are collected on the barren hills of Sweden, which is, indeed, the only country now exporting the article. It is much darker in colour than Irish moss and presents a more drooping and shrivelled appearance, but is quite soluble in hot water, and forms a jelly when cold.

Its natural bitterness is removed by soaking for about 15 minutes each time in several hot waters and finally boiling, or it may also be removed by digesting, say, 1lb. of it in 1½ gals. of cold water, containing 1 oz. pearlash, then draining

the lichen, edulcorating with cold water, and boiling it in a gallon of water till one-third of the liquid be evaporated. The resulting jelly if very dark may be dried, dissolved, and done over again.

It contains about 30 per cent. of lichen starch, but not a particle of gelatine. It is often boiled with milk and made into a very agreeable jelly-like food for invalids, etc. If made with water only, half its weight of liquorice-root added to the dry moss makes a great improvement.

In some Northern countries it is often pounded into bread.

Icing for Cakes, Biscuits, etc.—This should be made of white sugar and albumen. Beat the white of eggs to a full froth with a little rose or orange flower water, then add gradually as much finely powdered sugar as will make it thick enough, beating it well all the time. In applying it the cakes are first dusted over with flour, gently rubbed, and then the icing is applied either with a flat knife or with an icing tube. The ornaments are stuck on and all embellishments made while it is wet, and then the cake is set in the oven for a few minutes to harden, but not long enough to discolour the icing. Piping a bride's-cake is one of the most artistic operations of the expert confectioner, instructions for doing which cannot be satisfactorily conveyed in words. It requires a good deal of practice.

Icing Sugar. — See *Confectioners' Icing* and *Caster Sugars.*

Imitation Cheese.—See *Margarine-cheese.*

Immortelles, or Everlasting Flowers.—See *Flowers* and *Nosegays.*

Imperial Tea. —F. *Gros perlé.* (See also *Green Teas.*)

This does not constitute any particular species, but is a name given to any superior selection from the best green teas, such as Hyson, Gunpowder, Twankay, etc., and consists of the larger leaves of these varieties. In China "Imperial" tea means the choice tea used only by the Emperor and other self-styled "sons of heaven."

Imphec, or African Sugar Cane.—An African species of the common sorghum, and identified as *Sorghum caffrorum.* It is cultivated by the Zulus, both for sugar and for its starchy seeds. (See *Sorghum.*)

Incense. — F. *Encens.* (See also *Frankincense, Thus,* etc.)

A mixture of fragrant gums and spices which exhales perfume when set on fire. There does not appear to be any regular formula, every maker having his own favourite recipe.

Generally, it contains gum *olibanum* (which see), benzoin, styrax, and powdered cascarilla bark well mingled together. In use the powder is so placed that as the censer is swung round it drops little by little on to a hot plate, and the smoke escapes through little holes in the censer.

In ancient times the use of incense was general at all places of worship. It was burnt by most of the oriental natives in honour of their divinities. The Hebrews possessed in their temples the altar of perfumes, on which they burned incense in honour of Jehovah; but some say it was really to sweeten the air, the common people not being very cleanly in their habits.

Arabia has for ages been celebrated for its incense, but Persia and India now furnish considerable quantities, and much is also manufactured in our pharmaceutical laboratories.

India Pale Ale. — See *Ale.*

Indian Chutney.—See *Chutneys.*

Indian Condiments.—These comprise a long list of seasonings and delicacies.

Apply to J. A. Sharwood & Co., Ltd., St. George's House, London, E.C. The largest dealers in the world.

Indian Corn.—See pp. 177, 299, 300, 474, also *Maize, Oswego, Popcorn,* etc.

Indian Figs.— See *Prickly Pears.*

Indian Meal. — Ground maize or Indian corn. An excellent feeding stuff for cattle, but on account of its peculiarly coarse flavour it is not ordinarily relished as food by human beings.

Mixed with oatmeal, however, it is highly recommended by some persons, and especially in periods of famine. (See also *Maize Bread.*)

Indian Sorrel.—A species of mallow (*Hibiscus sabdariffa*) from the flower bracts of which a jelly is made, which forms an excellent substitute for red currant jelly.

Indian Teas. — (See also *Teas, Blended Teas*, etc.)—These comprise teas grown in the British East Indies, not in the West Indies, although the latter region has been tried for tea cultivation. The total land in India under tea is over 600,000 acres, and the crop in 1894 was about 126 million pounds. The Indian tea districts comprise Assam proper (or the Brahmaputra Valley), Sylhet and Cachar in the Surma Valley, Chittagong, East and West Dooars, Terai, and Darjeeling, also Chota-Nagpur and the districts of Kangra Valley, Kumaon, and Dehra Doon. In the Madras Presidency there are also about a hundred tea gardens, chiefly in the Nilgiri (or Neilgherry) and Travancore districts.

About 96 per cent. of the tea grown in India comes to the United Kingdom, and nine-tenths of it is grown in Assam and Bengal, or about 350,000 acres in the former, and 150,000 in the latter province.

The plants cultivated are of three principal classes, viz. :—

1. The indigenous Assam (*Thea assamensis*), thought by some botanists to be the original species whence all other varieties of tea have been derived.

2. The Chinese shrub as introduced by the Government in 1834, and before the superior value of the Assam plant was recognised.

3. A hybrid between the above two.

Indian tea-planting was only started in 1835, when the Government, at immense expense, began importing into India plants from China, and which were in time spread over many districts. Only fifty years ago the province of Assam was a vast wilderness covered with jungle and swamps, the abode of tigers and other wild beasts of all kinds, but now it has become the home of an industrious peasantry. The acreage under tea cultivation, divided into some 800 gardens, exceeds 350,000 acres, and increases at the rate of some 800 acres yearly. In 1820 it had been accidentally noticed that there was a species of native tree growing in the jungle, but for years this was thought unfit for use, and it was not till 1841, when an enterprising Englishman had manufactured some tea from the wild leaves and sent it to London, that its great value was discovered. In Mincing Lane it was pronounced the finest tea ever seen in this country.

The Assam plant in growth and form of leaf resembles the myrtle. Its blossoms are nearly white, similar to our wild rose, and very fragrant. The seeds of the berries yield an aromatic oil, and instead of the plant growing only 3 to 5 ft. high, as the tea shrub in China, it attains a height of 5 to 20 ft. in the jungle, with leaves 6 to 12 inches long. These are dotted with pellucid stems, containing essential oil, the number of cells being a guide to the quality and value of the tea it will yield. It fact, the native Assam growth has ever since been considered far superior to the Chinese, richer in *theine*, and yielding a far larger quantity of leaf per acre. It is, however, more tender and difficult of cultivation than the sturdy Chinese shrub, doing best in close jungles which are, unfortunately, very prejudicial to the health of Europeans. Hence the custom began of cultivating *hybrids* from Chinese and Assam plants, and this has gone on to a great extent; but it has been found to be a great mistake, and for the last twenty-five years many planters have been trying to eradicate the Chinese variety which were imported at such great expense. This is not easily done, the hybridising being difficult to prevent. By much crossing and intermixture the gradations from one extreme to another are almost imperceptible.

About 3,000 shrubs are planted on an acre of ground, or on a slope about 6,000 of the Chinese variety. The

plant in India grows very rapidly, a new "flush" of leaves springing forth every fortnight during seven or eight months of the year, and if not gathered at the proper time they become almost valueless—the delay of even a single day may be fatal.

Within limits, the harder a bush is picked the more it will struggle to put forth new leaves. The leaves are not slipped off close to the stalk, but broken or pinched off a little above the stem, thus leaving a small portion to protect the delicate bud which grows at the angle of the leaf and the stalk, and from which future crops are expected. Unlike the slow method still adopted in China with its hand labour, Indian teas are all rapidly rolled, twisted, or sifted, cured and dried by machinery, and scarcely handled at all after being gathered. Tea-making has practically become a factory industry in both India and Ceylon.

Rolled Tea.—There appears to be an erroneous impression abroad among grocers and others acquainted with the *raison d'etre* of the different processes connected with tea manufacture, regarding the purpose for which the green tea leaf is rolled. The operation of rolling the green leaf, after it has been withered, is to give it the necessary twist or curl, and also for the purpose of breaking or rather bruising the numerous diminutive cells of which the leaves are constructed, in order to induce chemical action to take place, the result of which is the product called tea. Placing the rolled leaf in regulated layers or heaps, or making it into balls, is to promote more rapid fermentation, not to set up fermentation which would take place in any case. "Balling" is resorted to for fixing the twist of the leaf; but as the general custom is now to give a second roll to the leaf after it has fermented to a certain point, it is seldom made up into balls, being simply piled up in trays or baskets as it comes from the rolling machine. We have used the common or garden term fermentation, the more correct expression would be oxidation or colouring, for the fermentation stage is just that which has to be avoided in the manufacture of good teas.

Gola, or *Ball tea*, in Ladakh (Cashmere), is a mixture of green and black tea bound with rice-water.

Rather extensive plant of machinery is required for tea manufacture, but the whole of the operations are completed within eight or ten hours, and the cost has thus been considerably reduced.

Of course, the bulk of both Indian and Ceylon teas come to England, but increasing quantities are going elsewhere.

INDIAN TEA TAKEN OUTSIDE THE UNITED KINGDOM.

	lbs.—1890	lbs.—1899
Australasia	5,118,714	8,772,050
North America	1,403,914	8,487,443
Turkey with Persia	1,681,157	6,387,919
Germany with Russia	201,282	3,315,173
South America	105,460	497,336
Holland	323122	486,103
South Africa	73,117	470,281
Denmark	——	197,646
France	50,311	68,296
Other places	473,865	969,686
Total	9,430,942	29,651,933

CEYLON TEA TAKEN OUTSIDE THE UNITED KINGDOM.

	lbs.—1890	lbs.—1899
Australasia	2,559,901	15,606,833
North America	829,408	8,289,376
Turkey with Persia	151,226	824,385
Germany with Russia	486,195	9,958,683
South America	52 559	594,579
Holland	131,575	309,149
South Africa	61,446	778,761
Denmark	——	315,065
France	30,269	182.819
Other places	267,611	1,918,955
Total	4,570,190	38,778,595

An advance from 14,001,132lbs. taken by outside countries in 1890 to 68,430,528lbs. in 1899 indicates the zeal of the British tea planters, and always is the best evidence that British grown teas have merits that are fast being recognised by countries accustomed to depend upon China and Japan for their supply.

The crops of India and Ceylon produced in 1899 were 305,000,000lbs., exceeding the crops of 1898 by 28,000,000lbs.

Large areas of land in India were placed under tea cultivation a few years ago, when exchange was very low. This

land is now commencing to bear leaf, and further increases of these teas may be expected for a few years.

It has, however, been complained that Indian teas are apt to contain small pieces of foreign earthy matter about half the size of peas, frequently spoiling the flavour by imparting a peculiar opium smell or bitter taste when liquored; tufts of woolly hair, finger or toe parings, high dried beetles, spiders, frogs, etc., also occasionally find their way into both Indian and Ceylon teas of the cheaper grades. (See "*Packet Teas.*") A "cheesiness" of flavour is sometimes noticeable from green or imperfectly dried wood having been used for boxes. Other chests have a cedary or drug-like odour, which soon permeates the tea and gives it an objectionable smell. As a rule, Indian teas are nearly double the strength of Chinese, but there is much difference in the former. The Sylhet teas, for instance, differ from those of Assam proper, and these again from the teas of Darjeeling, which latter are of a particularly fine character. Much of that grown in the higher latitudes of India also lacks the aroma so highly prized by connoisseurs, but being much stronger they all contain considerably more tannin (pound for pound) than Chinese and Japanese teas, producing much darker beverages. "Tannin" is held to be an objectionable property in all teas, and the higher the grade of Indian tea the higher percentage of tannin there is in it; but notwithstanding the medical outcries that have been made, it has been shown (see *Teas*) to be actually less in Indian than in Chinese, when compared with the richness of their other extractive matters generally, and the amount of leaf required for a given quantity of water.

It is keeping the tea leaves infused too long, "drawing," stewing, and boiling, that produces the excess of tannin. Three minutes is quite long enough for Ceylon and Indian teas to "draw," and five or six minutes for Chinese. Housewives and workmen should therefore be warned against these evils, also, when using Indian and Ceylon teas, to remember a less quantity of the leaf suffices. It is also important to bear in mind that Indian and Ceylon teas should be bought and sold *fresh* as possible, or that they should not be exposed long to the light and air, or they will rapidly lose both strength and flavour. On the other hand, it is said they improve very much with two or three years age if kept dry and air-tight. The rasping coarseness will be dispelled. Assam and Indian chests average about 96lbs. and half-chests 45lbs. each.

"*Java-Assam*" means tea grown in Java from Assam seed, and should not be sold as *Assam.*

Special Firms.—Indian Tea Planters' Co-operative Tea Supply Association, 6 Lombard Court, London (see advt. page 8); Jackson Bros. & Co., 14 St. Dunstan's Hill, London, E.C.; Morris and Jones, 13 to 19 Sir Thomas Street, Liverpool.

Indian Tobacco or **Gagroot.**—A common American herb, *Lobelia inflata,* growing 6 inches to 2 feet high, with numerous leaves and racemes of pale blue flowers. It is said to have been long used medicinally by the Indians and is now the officinal lobelia, with properties similar to tobacco.

Indigo. — Ar. *Med,* Da., Du., F., G., Sw. *Indigo;* It. *Indaco;* Port. *Anhil;* Sp. *Anil;* Rus. *Krutick.*

An important and valuable blue colouring matter, mostly used by dyers, artists, and laundry-blue manufacturers, but also sparingly by confectioners, etc. It is obtained from the leaves of several kinds of leguminous plants in the East Indies and China, and is a light friable substance of a deep blue colour. Nine-tenths of it comes from India, and is very powerful. The kind cultivated in Behar, Bengal, and known as *Indigofera tinctoria* is considered the best, and next to it are the *I. anil* of the West Indies, and the *I. guatemali* of Central America.

Some kinds of "indigo" are now produced by chemical synthesis, but the leguminous plant is the best source.

The *Yoruba indigo* is largely employed as a dye by the natives of Africa, but it is not yet so used in England.

The plant in Behar, which occupies about 700 Europeans, in addition to hundreds of thousands of natives, is nearly like that of tares, and the pods of similar shape. The seed, which much resembles gunpowder in size and shape, is sown in the spring in rows about a foot apart, and if kept free from weeds it grows very rapidly. In about nine weeks after sowing, and just as it is beginning to flower, the leafy stems, then 3 to 4 feet high, are all cut off with a pruning knife to within a couple of inches of the ground, another crop of leaves is ready in about six weeks, and even a third crop will grow in favourable seasons. The plant itself will last two years, but after that it is too weak, and is then pulled up and fresh seed is sown.

The leaves, similar in shape to those of the ash, are gathered into bundles, put at once into masonry vats, pressed down with wood, and covered with water, where in fifteen to twenty hours they begin to ferment, turning the water thick and green and evolving bubbles of carbonic acid gas, with traces of ammonia, and which float on the surface. The light green liquor is then drawn off into an empty vat, a little lime water is added to it, and well beaten up—this causes the green water to turn *blue* and settle to the bottom of the vat. The clearer water is next drawn off, and the pastey residuum is formed into small lumps or cakes, dried by the sun, and finally marketed. Its value in this condition is from 4/- to 6/- per lb.

The best is known by the lightness of its specific gravity and absence of earthy matter; by its assuming a fine copper-red polish when rubbed by a hard body; by its *not readily* imparting its blue colour when drawn across a white substance; and, above all, by the purity and intensity of its colour when deoxydised and made into a solution. Besides blue indigo, there are several other varieties and colours of indigo—brown, green, red, white, etc.

Artificial Indigotin.—Though the artificial synthesis of indigo was accomplished by Baeyer, of Munich, eighteen years ago, the product has only recently been available in large quantities by the Badische Anilin and Soda Fabrik for manufactuirng purposes, and it still lacks the indigo-red (indirubin, indipurpurin) so important in fixing indigo-blue on thick fibrous materials.

A quantity of indigo is grown in the Straits Settlements, especially about Singapore, by the Chinese and Malays, but lime is used in precipitating it, and this kind is generally very impure from lime and the dirty water employed.

Indigo is also extensively grown in Kwangsi, in China, and the prepared thick paste is there sold in jars containing 90¾lbs. each.

Three varieties are now being cultivated in Mexico—*I. tinctora, I. disperma,* and *I. anil.* They are made up into blocks, stamped with the plantation mark, and packed in heavy boxes, each holding 25lbs.

Infants' Foods. — See *Prepared Foods* and *Breakfast Cereals.*

Infusorial Earth.—See *Kieselguhr.*

Inga Seed or **Pois Sucrin.**—This consists of small black and bright oblong grains of flat shape, about same size as carraways, but straight and smooth, not rough or curved.

They are found in the long pods of the Inga tree, which is cultivated in certain parts of Asia and Central America, and this fruit is largely consumed by the creoles of the Antilles and Guiana, who call it "*pois sucrin.*"

Ink.—Da. *Blaek;* Du. *Inkt;* F. *Encre;* G. *Tinte;* It. *Inchiostro;* Rus. *Tschernilo;* Per. *Shai;* Port. and Sp. *Tinta;* Sw. *Blak;* W. *Inc.*

Of inks there are numerous colours and kinds; Indian Inks, Printers' Inks, Writing Inks, Copying Inks, Marking Inks, Stencilling Inks, Rubber Stamp Inks, Ticket Writers' Inks, Ink Powders, etc.

The blue-black inks of the present day consist of an extract of gall-nuts or other tannic matter in combination with an iron salt, suspended in water, containing gum, and mixed with indigo or some similar colouring matter.

The coloured inks are frequently simple solutions of aniline dyes; but logwood and other vegetable dyes are still used to a considerable extent.

Printers' Ink is usually a black paint, very smooth and uniform in its composition, and possesses a singular aptitude to adhere to paper which has been thoroughly impregnated with moisture.

Indian Ink is mostly made in China, and there are several factories at Shanghai. It is largely used as a writing ink in China, Japan, and other Asiatic countries, a small brush taking the place of a pen. Its mode of manufacture is kept a close secret, but is supposed to be merely a mixture of carbon and gum, with the addition of a small quantity of musk or Borneo camphor to give it the characteristic peculiar odour; but the manufacture is by no means easy. After the carbon and gum have been mixed, the product has to be slowly and carefully dried.

The moulding of the sticks is effected in moulds engraved on the inside with Chinese characters, such as the well-known dragon, etc., and the gilding is performed with gold-leaf. The high polish of the sticks is said to be produced by brushing them with a hard brush impregnated with tree-wax.

The fine soot produced by holding a plate over a lamp or candle mixed with clean size of parchment or glove leather is said to make an ink equal to that imported. The other inks mentioned are more fully described under their respective names.

Special Firms.—Punch Polish Co., Hick Street, Birmingham—F. Cooke (proprietor).

Insect Powders, Insecticides, etc. —There are several kinds in the market, the *Dalmatian*, *Persian*, *Buhach*, etc. Most of them are made from Pyrethrum flowers, which, in 1853, were discovered by M. Vicat, a Frenchman, to be fatal to insect life, and it was he gave them their name of Insecticides. The Dalmatian are now the most popular. They consist of the powdered flower-buds of two species of Chrysanthemum, namely, the *Pyrethrum cinerariæfolium*, a white chrysanthemum as grown in Dalmatia, and *Pyrethrum roseum*, a red chrysanthemum, native of the Caucasus.

The Asiatics south of the Caucasus kept the drug secret until early this century, when an Armenian merchant found it out, viz., that it was a certain species of Pyrethrum, growing in the mountain region of what is now known as the Russian province of Transcaucasia.

The history of the Dalmatian species still remains a mystery.

There is reason to believe that the Caucasian species is not cultivated, while the Dalmatian probably is, though no definite information can be obtained owing to the jealous watch kept over the industry.

The flower-heads should be gathered in dry weather, when they are about to open, or when fertilisation takes place. When the blossoming has ceased, the stalks are cut within four inches of the ground and utilised by grinding and mixing them with the flowers in the proportion of one-third of their weight.

Neither flowers nor powder should be exposed to moisture, air, heat, or sunlight. They should be dried under cover, and ground *fine as possible*.

The powder should be kept in perfectly tight glass vessels or tin boxes. This kind of insect powder is a specific poison to aphides, house flies, and mosquitoes (or gnats), and if used with bellows is effectual in killing the common insects that infest plants in houses.

The powder may be burnt in the treatment of rooms, wardrobes, and greenhouses.

The disadvantages of the powder are chiefly its transient effect and the necessity for actual contact with the insects when used in the open air. It has no effect on insects' eggs or hard chrysalises, on beetles with hard elytra, and on the vast class of bugs. Cater-

pillars and spiders of all kinds are also proof against it.

Persian Insect Powder used also to be made from the Caucasian flowers, locally known as "Guirila," but during the last few years many adulterated and worthless preparations have been sold as Persian Insect Powders, and the preference now is for the flowers from Dalmatia. It is probable that both kinds are equally effective, if unsophisticated, but the Caucasian and Persian growths are no longer of commercial importance. Some authorities say that the plants were all of Persian origin and only introduced afterwards into Dalmatia and the adjoining States of Herzegovena and Montenegro.

The toxic or valuable properties of the flowers are said to be mainly due to a soft, acid, resinous body (say, 4·5 per cent.) and partly to a volatile oil (say, 0·5 per cent.), both of which are present in rather higher degree (say, 5 per cent. together) in the closed or *unopened* flowers.

Trieste is the greatest trade centre for the Dalmatian flowers, which are classified and marketed as:—Small closed flowers, 60/- to 100/-; large half-closed, 50/- to 95/-; open flowers, 45/- to 75/-; wild, 40/- to 50/- per cwt. They arrive from Trieste in bales of 4 cwts. and kegs of 1½ cwts., and are sold at gross for nett weights, packages free.

The third and fourth qualities possess very little insecticidal virtue. Extreme tenuity being an important necessity, the flowers are ground into the finest powder, either abroad (in Austria) or in England. The latter is considered the more reliable, but is seldom free from adulteration. The foreign ground powders are mostly heavily adulterated, and the terms "closed," "half-open," "open," "wild," or "cultivated" flowers are quite unreliable, unless as degrees of badness.

Buhach is the name of powder made in California from the flowers of *Pyrethrum cinerariæfolium*, now cultivated near Atwater, Merced County, and ground at mills at Stockton, near San Francisco.

The plant grows about 30 inches high, and is set out in rows 4 feet apart and from 15 to 24 inches apart in the rows. When harvested, the stalks are cut just above the roots, and the flowers stripped off them by passing the plants through a kind of comb. The detached flowers fall into a box below, and are carried to the drying ground, where they are spread on sheets and exposed to the rays of the sun during the day, being repeatedly turned over in the meanwhile. They are covered during the night to prevent their absorbing moisture, as the perfect drying of the flowers is most important, in order to retain the volatile oil which gives the powder its insecticide properties. It is also very necessary that this operation should be done quickly, and that the flowers during the drying process should be protected from moisture. A slight dew falling upon the flowers at this time will injure both colour and strength. As already observed, all these insect powders are very liable to adulteration, and especially with the Hungarian daisy, Euphorbium and quillaia bark, also with the stems and leaves of the pyrethrum plant, fustic, turmeric, chrome-yellow, and other colouring matter. They may have a very pungent odour and make a person sneeze, but have no effect on insects. There is also much difficulty in distinguishing the Persian from the Dalmatian product. The unground flowers are, however, much preferred by large dealers.

How to judge Insect Powders.—Place 100 grains of the powder in the cylinder of a glass syringe (say, 1 oz. size). The powder should be pressed down compactly on to a piece of absorbent cotton to act as a filter. Then moisten the powder with ether ·735, close the top of the syringe, and macerate for 30 minutes; percolation may then proceed; the powder being re-percolated with the same fluid four times, and finally washed through with sufficient ether to make up one fluid ounce. The resulting percolate should be of a rich yellow colour; if *greenish*, it proves adulteration.

A perfect sample of insect powder should pass through a sieve having at least 80 meshes to the linear inch.

Grinding into powder costs about 3d. per lb. It should be kept close as possible and not exposed to the air, or it soon loses its virtue.

A good remedy for insects is made as follows: — Take of powdered resin 2 ozs.; caustic soda, ½ oz.; fish oil, ¼ oz. Mix in a kettle, pour 10 ozs. of cold water over the mixture, and boil for at least one hour, replacing the evaporated water occasionally.

A good way to remove fleas from dogs, etc., is to rub well with oil of aniseed. If dogs are allowed to sleep on deal shavings they will never be troubled with fleas.

Special Importers of Insect Powders.— Kimpton Brothers, 36 and 37 Mincing Lane, London, E.C.; F. Newbery & Sons, 27 and 28 Charterhouse Square, London, E.C.; C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Gardner's patent "Rapid" Sifter and Mixer, freely used for above. Prices from 50/- to £100. Catalogues from Wm. Gardner & Sons, engineers, Gloucester.

Insect Wax. — See *Chinese* and *Japanese White Wax*, *Shea Butter*, *Lac*, *Vegetable Wax*, etc.

Inulin.—See *Yams*.

Invert Sugar. — Ordinary sugar melted or changed back into syrup form. One kind consists of cane sugar which has been converted by acids into a mixture of dextrose and lævulose, and is called "invert" sugar because it rotates the ray of polarised light to the left instead of to the right, as does normal cane sugar. The other sort of "invert" sugar, as used by brewers, etc., is ordinary glucose.

Iodine.—F. *Iod*; G. *Jod*.

Discovered in 1812 by *Courtois*, and was first employed in a hospital in London in 1825. Large amount now made at Stavanger from Kelp or burnt sea-weed.

Irish Butter. — (See also *Butter*, *Margarine*, etc.) — There are three systems of butter-making in Ireland— first, the creamery system; then the factory system, and also the old-fashioned dairy system, where the farmer makes the butter himself.

Through the praiseworthy exertions of dairy societies, the production of butter in Ireland is gradually and satisfactorily augmenting. There are about 40,000 milch cows in Ireland and about 350,000 statute acres of pasture land, so that butter might be the staple industry. One pound of excellent butter can be produced from 2·44 gallons of milk. In past times this valuable industry received far less attention than it deserved. Cork was, and to some extent still is, the great market centre, and the merchants there were able to do so good a business that they were apparently content to let the farmers continue in the old grooves. But they were at length stimulated by the competition of Denmark and some other places abroad, where more care was given to dairy work and to the preparation of the consignments for market. This opposition has had a salutary effect, for blending mills and creameries are to be found scattered over Ireland now, to receive and deal with the produce of the surrounding farms. (See *Blended Butter*.) As to whether the Creamery or Blending system is the best for the Irish farmers, there appears to be divided opinion, but in Cherbourg, France, where both have been tried, the preponderance is in favour of butter properly made by small farmers being collected at the weekly market towns, and afterwards blended by the exporters. In Ireland the larger farmers appear to be sending their milk to the creameries, while the small cottiers find it best to sell their butter to the *Blending factories*.

The introduction of the creamery and hand separating system, as well as the adoption of the factory system and improved methods of dairying as taught at the Glasnevin and Munster dairy schools, under the able supervision of Professors Carroll and Smith, have brought Irish butter to a much higher state of excellence and uniformity. Upwards of 200 steam dairies and numerous blending mills are already at work in that country, and, with its equable and moist climate, the ancient prestige of Ireland for finest

butters should soon be recovered. Four-fifths of the farmers in Munster rely mainly upon their butter for meeting their rent and other important obligations.

The Irish grass butter season begins usually in April, and closes in November, and during that period the cows are fed in the open, and the best butter obtained. It used to be mostly packed in firkins, but is now largely exported to England in small packages of fresh prints and rolls, or preserved in tins for hot climates, for which it is found very suitable, and retains its good qualities unimpaired for a long period. Assuming that Irish butter can hold its own against all other imported kinds—and this is not impossible to a country whose humidity gives rich pastures—every firkin available for export would find a purchaser on this side of the Channel; and we need not point out the effect of a material increase of the supply upon the prosperity of Irish producers.

In the three southern provinces of Ireland the cream is churned as in England, but in Ulster, from time immemorial, the habit of churning the whole milk has prevailed. The chief drawbacks to Irish butter are careless and unattractive packing, lack of uniformity in the qualities, smokiness of flavour, arising from the peat fires in Irish cabins and farm-houses, and *excess* of *water*. Since the introduction of special machinery by butter merchants for mixing butter and breaking up the globules at the blending factories, it has been found easy to incorporate 20 to 30 per cent. of water, and a class of persons, known as "butter slachers," are thus doing the trade serious injury. Butter which seems to weep most does not always contain the most water. It is all a matter of temperatures during the churning and machinery, and it is possible to produce butter with 30 to 35 per cent. of moisture, that, when cut, will not show a thimbleful; whilst others with only about 12 per cent. will give off water at every cut.

A report of an investigation carried out for the Munster Dairy and Agricultural School, Cork, in order to ascertain the proportions of water contained in Irish salt butter, was issued in 1896. The butter examined was that of the Munster School, an estate on which it is well made, a co-operative dairy, and a number of tenant-farmers' dairies. The dry-salting and pickling processes were separately examined, and the examiners reported in favour of the former, as equally effectual in preserving butter, while much less liable to introduce an excess of water. Out of 164 samples of dry-salted butter only three contained 19 per cent. of water or more, while only five contained over 17 and under 18 per cent., and 120 ranged from under 10 to under 15 per cent. The average was only 11·95 per cent. The average proportion of water contained in a number of samples brined at seven different temperatures was 26·44 per cent., and the range was 17·03 to 42·62 per cent. The latter extreme was that of one lot of butter salted in brine at a temperature of 105 degrees. It is therefore evident that when dry-salted butter is worth 1/- per lb., pickled butter would be worth only 10¼d. per lb., supposing the proportions of water shown above to be representative.

The Cork butter marks are / for Firsts, X for Seconds, H for Thirds, and -H- for Fourths.

There is only one standard but no less than seven grades, viz., *three* in slightly salted butter, and *four* in the heavily salted.

In 1896 the trustees of the Cork Butter Market raised the qualification for all grades, also introduced new brands, known as "Choicest Mild Cure," "Primest Salt," "Choice Mild Cure," and "Prime Salt."

These brands bear the daily date of inspection, and are now arriving in the market in best condition, and in increased supplies.

The "Choicest" and "Choice" Mild Cure are packed in either firkins or pyramid boxes, weighing not less than 55lbs., or more than 57lbs. of butter, and in smaller boxes of not less than 27lbs., or more than 29lbs. of butter.

The "Primest" and "Prime Salt" butters are packed in firkins of white

oak, white hooped, and fully bound, weight of which is not to be less than 55lbs., or more than 57lbs.

Cleanliness is assured by having all branded butters leaving this market wrapped in parchment paper, and every package covered with canvas.

Irish Moss.—See *Carrageen.*

Irish Whisky.—See *Whiskies.*

Isinglass. — Da. *Hunsblas;* Du. *Huisblad, Vischlijm;* F. *Colle de Poisson, Carlock;* G. *Fischleim, Hausenblase;* It. *Colla di Pesce;* Lat. *Colla piscium;* Port. *Colla de peixe;* Rus. *Ichthyocolle, Klei Rubüi, Karluk;* Sp. *Cola de pescado;* Sw. *Husblas.*

A whitish dry leathery semi-transparent substance twisted into several shapes, but often cut into fine shreds. It is often prepared from the air-bladders and sounds of various species of *Acipenser*, or other large fish.

But true isinglass is made from the air-bladders of sturgeons only, and is a tissue dried and cured, but which has *never been dissolved.*

In removing the eggs from the sturgeon for caviare in Russia, the swimming bladders situated above the dorsal spikes of the fish are plunged in water and separated from their external skin, cut lengthways, covered with cloth, softened by the action of the hands, made up into tablets or small rolls, and these constitute the true isinglass as imported.

It used to all come from Russia, but is now imported from several points—East India, North and South America, etc.—although the Russian is still considered to be the best.

Brazilian Isinglass from Para, is made from the air bladder of the *Sudis gigus*, common in the river Amazon, and is of a reddish brown colour.

Isinglass dissolves readily in hot water, and is used for a great number of purposes, such as clarifying beer, wines, liqueurs, etc., preparing creams, jellies, blancmange, etc. With silk it is made into "court sticking plaster," and with gum is used for stiffening and adding lustre to gauzes, linens, and silks, varnishing, and glueing delicate objects.

Probably there is nothing that is more extensively adulterated than Isinglass, which is not gelatine, but a natural product, viz., the air-bladder of the sturgeon cut into very fine shreds; whereas gelatine is obtained by boiling animal matter, and costs considerably less than Isinglass—hence the adulterations.

The following simple test will enable those who feel an interest in ascertaining the purity of their purchases to do so, viz. :—Cold water being the natural element of Isinglass, it is insoluble in it, and retains its thread-like form without materially swelling; while fine-cut gelatine and other preparations sold as Isinglass, if subjected to the same process, will swell and partially dissolve.

The result is reversed by using vinegar and water, for then the gelatine and imitation Isinglass will be practically insoluble, while the genuine Isinglass will swell and readily dissolve into a jelly-like mass, leaving no traces of its original form.

To detect the difference between Russian and Brazilian, pour boiling water on each of these kinds, and this result will be produced, viz. :—Russian will become a comparatively clear liquid, and Brazilian a very opaque milky solution.

Good Isinglass is also unchangeable in the air; the clearest is best. It is sometimes adulterated with gelatine, and should always be tested before purchase. Over 100 tons of Isinglass are imported every year.

Isinglassine is a pure, nutritious, and economical substitute for real Isinglass, which article is rather expensive.

Isinglassine is manufactured only by the patentees, Messrs. Gridley & Co., the well-known Isinglass merchants, of Bishopsgate Avenue, London. The retail price is 6d. per packet, sufficient to make a quart of brilliant jelly.

Islay Malt (pr. *iss-lay*).—A celebrated kind of whisky distilled in the island of Islay, on the west of Scotland.

Italian Butters.—In Italy butter is only produced in four districts—in the plains between the Alps and the Po, in the Tyrol, in the districts of Reggio, Emilia, and Sorrento,

The best qualities come from Lombardy, and the prices are regulated by the Milan market. The butters of Reggio and the Tyrol are used mostly for mixtures, and the Sorrento products are disposed of on the Naples exchange. In the other Italian provinces oil is generally used instead of butter.

Italian Cheese.—The best known of these is the "Grana" (or Parmesan cheese), so-called from its granulated texture. Next come the "Gorgonzola," "Emmenthal," and "Stracchino" of Lombardy, the "Fontina" of the valley of Aosta, and the "Cacio Cavallo" of Rome and Southern Italy. The latter is, however, produced on a small scale also in Lombardy. In shape grana cheeses are round, have an average depth of 8 inches, and a diameter of 2 feet. Those produced at Parma, Reggio Emilia, and Modena weigh from 44lbs. to 132lbs., with an average of 80lbs. In Lombardy the cheeses weigh from 110lbs. to 156lbs. and even 200lbs. One hectolitre of milk yields from 5·50 to 5·85 of butter. Grana cheese cannot be exkilos. of cheese, or 2·25 to 2·50 kilos. posed to an elevated temperature without injury, yet it stands long journeys if properly packed. The principal centres of production are the provinces of Milan (Milan, Lodi, Codogno), Como (Lecco), Pavia, Reggio Emilia, Parma, Belluno, Modena, in the north of Italy where abundant pastures for the feeding of cattle are always available. Generally, no preservative is employed but the common salt, which is added to butter when exported. Many of them are preserved in brine, and are exceedingly salt. Some large exporters of Venetia and Lombardy, however, employ a special salt obtained from the mines of Lungro (Calabria Citeriore), which, although more adapted than common salt, is said to be still inferior to the salts of Egestorff, Lüneburg, Stade, and Linden, employed abroad for foreign cheeses of a superior quality. Its chemical composition is the following:—Chloride of sodium, 97·69 per cent.; sulphate of calcium, 0·06; chloride of magnesia, 0·05; chloride of calcium, 0·15; sulphate of sodium, 1·40; water, 0·21; insoluble matter, 0·44. This salt is found in blocks and ground for use.

From Sicily a limited quantity of a mediocre quality, but of a peculiar flavour, is exported to satisfy especial tastes of Italian residents in Trieste, Constantinople, England, and France. In Piedmont, Romagna, and Tuscany also, some good cheeses are made.

The whey that remains after the cheese is made is generally utilised in Italy to make the "ricotta," which is produced in the following manner: The whey is heated up to 80° C (176° Fahr.) and worked up with the "follatoio," a long stick, to the end of which a round wooden disc is affixed. In less than an hour the "ricotta" appears on the surface of the liquid, and is collected and placed in baskets to dry. The ricotta is either eaten fresh or else is salted and dried in the oven, when it is used by the peasantry as cheese.

To make a "*firma*" per diem, which is a large cheese weighing from 1 to 2 cwt., not less than 50 cows are required, and on some farms as many as 120 to 150 head are kept. When the cows on the farm are few in number, the owners either join together for the purpose, or sell their milk to the professional cheesemaker. The "Casaro" or cheesemaker among the peasantry stands in a better position than other workers. The "Casari," indeed, may be said to form a species of caste, and they surround their craft with as much mystery as possible.

Their wages in money and kind equal from 2 to 3 lire a day. They are fully conscious of their importance as the arbiters of the most valuable product of the country, and are held in great consideration by the farmers, with whom they treat as equals.

Italian Paste.—F. *Pâtes alimentaires;* Port. and Sp. *Pasta Italiana.* (Also known as *Genoa, Neapolitan,* or *Naples Paste,* etc.)

A peculiar preparation of wheaten flour, produced only in South Italy and Sicily until recent years.

Similar pastes are now made from Taganrock, African, Auvergne, and

ordinary wheats in France, especially around Lyons, Marseilles, and Auvergne, also in Trieste and some other countries, from semolina or ordinary flour, which latter is, however, much less suitable, but it is made in greatest quantity on the coast of Genoa and in the Neapolitan Provinces. About half the Italian export goes to America and the rest to France, England, Austria, Turkey, and Egypt.

In Sicily and Naples it is made in great perfection, and forms the staple food of the people. The best is made in Genoa, where it is prepared from the hard red and most glutinous sort of Italian or Russian wheat. The kind is known as *grano duro* (hard wheat), and was originally imported into Italy, from Taganrock, the neighbourhood of the Black Sea, about four centuries ago.

This hard and highly nitrogenous wheat is first washed and then ground up into a coarse meal, or *semolina*, which, when dressed, the husk or bran and coarser parts of the grain being removed, is pure wheat flour. It is then mixed with water and well kneaded, either by hand or in heavy wooden blocks worked by powerful levers, till it forms a very tenacious paste. This is put into a cast-iron barrel or cylinder, somewhat like a cullender, which has a perforation of small crescent-shaped holes at the bottom. Pressure is applied at the top of the paste by means of a plate of iron and a screw piston, forced slowly through the holes at the bottom in continuous streaks, the pressure employed in some factories being over 3,000 pounds to the square inch.

As they descend, the crescent-shaped streaks shrink and come together, and being moist they unite and adhere, thus forming long, slender, hollow tubes or pipes.

These tubes also dry as they descend, and are then received by the work girls, nipped off, and twisted into the desired shape. Some kinds are put through wire gauges with or without mandrels, as in wire and pipe drawing, and a fire under the cylinder dries or partly bakes the paste as it descends. (See *Macaroni*.) This kind of paste is, in fact, made into a variety of sticks, lozenges, disks, ribbons of several sizes and forms. After being cut or twisted into the desired shape, the product is then further dried on wooden rods till quite hard and crisp. It is sometimes made into flat ribbons or fillets by being pressed through flat holes.

Italian Paste is thus the generic term for a great number of forms which it assumes, such as *Macaroni*, *Vermicelli*, *Fedelini*, *Sparghetti*, *Mostachiola*, *Reginette*, *Ditalini*, *Zita*, etc. (See also *Lazagnes*, *Cagliari*, *Glutinata*, *Pastina*, *Strichetti*, *Tortellini*, etc.)

They are all made from the same kind of paste, as above described, and merely take their form from the size and shape of the holes at the bottom of the metal cask or cylinder employed.

The dough is sometimes rolled into thin sheets and stamped out into little stars, rings, letters, figures, and other curious, elegant, and fancy forms (see *Pâtes Alphabétiques*); but the most approved method of making these now is to pass the paste through a cylinder with a piston working horizontally. The apertures then have the shape of the star, cross, etc., and revolving knives working just outside the cylinder cut the slices as the mass emerges.

The lightest coloured pastes are usually preferred, although that is a mistake. White pastes should, in fact, be avoided, as they are not the product of honest manufacture. The red colour of the proper grain imparts a brownish tinge to the genuine paste.

Genoa paste is occasionally coloured with a little saffron, but picric acid—a very injurious substance—has been detected in some imitations.

Naples paste is usually made in straight pipes, thicker than Genoa, and is about a penny per pound cheaper.

The use of these pastes, or *pâtes*, is rapidly and deservedly extending throughout the world. Care must be taken to procure them new and fresh as possible, and not to keep them on hand too long, or they are apt to turn rancid, mitey, or weavilly. Sometimes by

absorbing moisture they go mouldy or musty. They are best judged by the smell, and should be kept in a cool, dry place, and it should be remembered that the best qualities, being richest in gluten, are the most easily fermented and spoilt. The finer qualities arrive in square chip boxes of about 4lbs. each, but while Vermicelli boxes often contain a few ounces *over*, Macaroni boxes are usually *under* this weight. It is, however, a custom of the wholesale houses to buy them all at actual weights, and sell them to retailers at nominal weights.

Italians say this paste is as a rule disgracefully served in England. The pipes should *not* be broken up small, but boiled to a nicety and without being burst. Time is wanted more than heat.

Thousands of small factories (many of them very dirty) are scattered throughout Italy, which are operated entirely by hand, but the larger establishments are carried on by steam power.

Importers.—Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool.

Italian Wines. — These are very numerous, but principally made for home consumption. The sparkling kinds differ from those of other countries, being less effervescing. There are some boiled varieties, but they are not much known. Tuscany is deemed better as a wine district than any other part of Italy, and the best sorts are *Chianti* (a red wine grown on the estate of Baron Ricasoli, and rather popular in England) and *Monte pulciano*, which latter is made from a mixture of ¾ black with ¼ white grapes.

The mode of bottling in Florence has given rise to the term "flask of wine," these wine flasks being almost identical with those in which oil is exported, but of larger size. Sometimes a little oil is placed on the top of the wine in bottle, and then stoppered with only a little plug of cotton-wool instead of a cork, in the old Roman fashion.

The layer of oil is to keep the wine free from the air. When, however, the wine has to be used the oil must be got off, and the usual method of removing it must be seen to be appreciated.

However carefully done, enough oil is left behind to flavour the whole and make it objectionable to those who do not like oil.

The annual wine yield in Italy is about 450 million gallons; in 1895 it amounted to 21,343,000 hectolitres, as against 25,816,588 in 1894.

The falling off is attributed to the rains falling at a moment favourable to the incursion of cryptogamic disease.

The largest quantity is produced in the Southern Adriatic provinces. Sicily comes next, then follow the Mediterranean provinces, Tuscany, Emilia, Piedmont, Lombardy, Venice, The Marches, and Sardinia.

The chief kinds are:—*Sparkling:* Asti (red and white), Nebiola, Logrimo, and Passeretta. *White:* Malvasia or Vino Santo, and Vermuth.

Other kinds are:—Monte Fiascone or Est Est, Montelcino, Santo Stefano, Rimaneze, Vino Greco, and Chaumont.

Monte Pulciano, a sweet and somewhat astringent wine of purple hue, is considered one of the best.

Antella, Artimino, Carmignano, and Poncino are also very fair kinds.

Verdea, of greenish colour, is made in Arcetri, near Florence.

Trebbiano is a syrupy kind, of golden colour.

Lachryma Christi is a rich red wine of Naples, and both Albano and Orvieto resemble it very closely.

Capri Binuro is a fish or oyster wine, and has a bouquet entirely its own.

Valtellina resembles Medoc, but has a much fuller body of wine.

Barbera, Barola, Inferno, Lambrusco, and Braccheto are great favourites with Italians.

Muscadenes and dry wines are mostly made at Reggio.

Asprimo is white and foamy, with sharp taste.

Carigliano has a flavour of fennel.

Aleatico, Giro, Malvasia, Vino Santo, Bosa, Ogliastro, and Sassari are all produced in Sardinia.

In Italy the vines are allowed to follow their natural mode of growth, and are simply trained picturesquely

amongst trees and on trellis-work. In other countries, where the culture of the grape has been scientifically treated, the varieties have been astonishingly multiplied; but it is surprising how small is the change that the lapse of time has brought into the culture of the vine in Italy. On reading the usages of the ancients, it appears the plant is still grafted and managed there as it was in the time of Varro, author of *De Re Rustica*, who died 28 B.C.

Ivory Black.—See *Charcoal*.

Izal.—The registered name of a disinfectant. It seems to consist of tar acids made into an emulsion by means of gelatine.

J

Jaffa, or Joppa Oranges.—From Jaffa, or Joppé, an ancient seaport on the Syrian coast, near Jerusalem.

Eighty per cent. of the crop, from 200,000 to 350,000 boxes, holding 80 to 160 fruits each, and weighing about 84lbs., is shipped to Liverpool, and nearly all the rest goes to London and Glasgow, through the agency of British subjects on the spot.

The superiority of the Jaffa oranges for both size, sweetness, and flavour is world-renowned, and the consumption in England yearly increases.

Their colour is paler than the Spanish fruit, but a special feature of them is that they will keep thirty to forty days, and, if properly packed, for two and even three months.

Their cultivation has been carried on many centuries about Jerusalem, in Palestine, but until about 1875 the fruit was known only in Beyrout, Alexandria, and Constantinople. The industry now finds employment for a very large number of men and boys, and is regarded as one of the chief sources of income for Jerusalem and Jaffa. The area at present devoted to the orange culture is only about 3,000 acres, and cannot well be much increased, but the Jewish settlers in the colony of Petah-Tikva are planting a large part of their grounds with orange trees. There are in the plains around Jaffa some 500 gardens, containing about 800,000 trees. In Palestine (both about Jaffa and Gaza) the orange trees never suffer from any noxious insects, fungus growth, or disease of any kind, and both climate and soil are admirably adapted for producing healthy trees; but the groves require to be artificially watered from May to November, and the system of irrigation is one of great antiquity. There was a time when Jaffa oranges, as an article of commerce, used to be exported to Russia, Austria, France, and to various parts of Turkey. Later on small quantities were sent to Liverpool and London, and had to be transhipped at Port Said and Alexandria; but in consequence of injuries received whilst being transferred from ship to ship, and the long time it was on the way, the fruit suffered much, and was in a bad condition by the time it reached its destination. Since, however, the steamers of the Prince Line have begun plying directly and regularly between Jaffa and Liverpool, and English merchants have empowered their agents to advance money to the shippers, the orange trade with England has so developed that what is now sent to Liverpool alone amounts to 80 per cent. of the crop, the freight to that port being but 1/6 per box. By this arrangement the natives find themselves in the satisfactory position of being able to dispose of their fruit at a good price, and the English merchants also make fairly good profits, and the trade cannot help thriving.

Oranges and lemons are also exported in large quantities from Sidon, North Palestine. This fruit is usually packed in boxes containing from 200 to 300.

Jaffna Moss.—See *Ceylon Moss*.

Jaggery Sugar.—A rough coarse kind of brown sugar, resembling crude

Maple sugar, and obtained in Ceylon and India by boiling and evaporating the juices or saps of certain palms, such as the gommutti, cocoa-nut, kittool (*Caryota urens*), palmyra, and especially the date palm (*Phœnix sylvestris*) which often yields as much as 180 pints of sap, or over 100lbs. of sugar. The caste who prepare this sugar in Ceylon are known as Jaggeros. The kittool palm also yields a bastard sago, and a fibre called Elephant fibre or Indian "gut," commonly used in making fishing lines, brushes, etc., and is the nearest approach to bristles.

Jaggery is frequently formed into small round cakes, and exported in mats. It is very like cane sugar, and often sold as such; indeed, after refining it is almost impossible to distinguish it from West India cane sugar.

Children should be warned against eating it, especially in our seaport towns, where it is often exposed on the quays and wagons on its way to the refineries, for it is generally full of beetle-like animalculæ, invisible to the naked eye, but which have been known to eat the stomach and intestines so as to cause death from *peritonitis*, by inflaming the bowels.

Jalap. — A popular purgative, taking its name from Xalapa, in Mexico, and obtained from the roots or tubers of an Indian plant known as *Ipomœa purga*. As cultivated in Madras, Ootacamund, Jamaica, etc., the tubers are planted in rows on ridges a few inches high to prevent water from becoming stagnant around them. The plants, being of a climbing nature, require stakes or trellis, like peas. The stems die down annually, and the tubers remain dormant for two or three months. One acre of land will yield at the expiration of three years about 5,000lbs. of green tubers, which, when thoroughly dried, give 1,000lbs. of jalap powder. The consumption in the United Kingdom is about 200,000lbs. annually, chiefly imported from Mexico, *viâ* Vera Cruz.

Jam. — F. *Confiture*; G. *Conserve*; Port. *Doce*; Sp. *Dulce*. (See also *Preserves*.)

The manufacture of jam has undergone a great change these last few years, and England is now, thanks to cheap sugar, the greatest jam-making country in the world. It used to be a common practice to bruise or pulp the fruit and pass it through a small sieve before boiling it; but now the cheapness of sugar, coupled with the fancy for "whole fruit" jam of bright and fresh colour, has quite revolutionised the old style.

Instead of pulping the fruit, using very little sugar, and boiling a long time, thereby spoiling the colour, form, and flavour, it is now the rule to use more sugar—good loaf or crystal—bring the jam to boiling point as quickly as possible, and then boil rapidly and only for a very short time. Cane sugar is by far the best. No manufacturer who knows his business will use *beet*, no matter how beautiful or cheap it may seem. In most of the modern factories it is boiled by steam at a pressure of, say, 30lbs. to the inch. By this process the watery portion of the fruit is evaporated in some seven to ten minutes, and the steam-jacketed pans being very large, one or two hundredweight of jam is perfectly boiled in a single pan in a marvellously short space of time. The steam being turned on and regulated by a tap, boiling commences quickly, and is continued slow or fast as desired. It has also been found that there is no profit in using cheap "pieces," or raw sugars, as they lose considerably in weight in boiling, taint the flavour, and deaden the colour of the jam. The superior sugar, moreover, congeals much better, forming with the juice an excellent thick jelly.

As already stated, the results aimed at nowadays are the preservation of the natural colour and form of the fruit and the thick jelly-like syrup; but every jam firm has, of course, some process of its own by which it professes to obtain better and more showy jams than its competitors. Some prefer

"real jam," with the fruit in a pulpy mass. This is effected by passing the fruit—currants, raspberries, strawberries, etc.—down a hopper into a wire-woven cylinder, inside which brushes revolve, pressing against the wires, the pulp being squeezed from the fruit, and the stalks turned out as clean as if washed. Boiling pans should be made of copper or bell metal, and be kept bright. Silver has been tried, but the inherent acid of the fruit is apt to form a chemical compound with the ore, and does not answer well. Iron, zinc, or tinned pans or utensils should never be used; they discolour the product and impart a metallic taste.

The fruit should be neither too ripe nor too green; if the former it boils tough, the colour is also dull, and the juice remains syrupy instead of changing into a bright jelly; if too green it boils sloppy and tastes of the tree. (See *Green Fruit*.)

If the fruit is to be pulped and stored in bulk the casks or stone jars in which it is filled should be thoroughly cleansed and "sulphured." Break up a little bar sulphur, put the pieces in an iron pot (similar to one in which tar is melted), stand the pot on the top of a hot furnace plate, and let it remain until the whole of the contents become liquid. Have ready a few strips of unbleached calico; then take a strip and dip half its length in the sulphur, light it, and let it down into the vessel, and bung loosely (not too tight), leaving the undipped end of the strip outside.

In a few minutes, according to the size of the cask or jar, the burning sulphur will exhaust all the air, and the rag may be withdrawn. The bung must then be replaced tightly until the vessel is wanted for use. The sooner the hot pulp is put into it and the bung driven fast in the better.

The principal fruits imported from foreign countries are red currants, black currants, plums, cherries, greengages, and French apricots. Very few strawberries or raspberries come from abroad, and these jams are consequently nearly all made from British fruits. Some raspberries are, however, imported from Canada. In the Clydesdale district, Scotland, there are about 250 growers, occupying 3,000 acres of land, about half being laid out in strawberries. Black currants are mostly grown in England, very few in Scotland.

Manufacturers have been charged with using almost all kinds of abominations to adulterate jam; some critics are quite sure that turnips, carrots, and other vegetables are commonly used; but the idea is quite absurd, and if those illogical libellers would just try to produce or cheapen jam with such substitutes many of these fine old crusted delusions would the sooner be eradicated from their minds.

Some manufacturers, however, do frequently use cheap damaged fruit, also fruit pulp which has been deprived of most of its juice, for making syrups, jellies, and fruit essences; the bad colour of the damaged fruit being artificially coloured with aniline or coal-tar dye, while the exhausted pulp, rich in seeds but defective in juice and flavour, is generally boiled with a special kind of grape sugar, or *liquid glucose*, this thick factitious syrup partially supplying the place of the natural juice extracted.

A little glucose, say 5 per cent., is undoubtedly an improvement, but when manufacturers put in 20 to 50 per cent. it amounts to a fraud on the consumer, for the glucose and water is only worth about a halfpenny per pound.

It cannot be denied, also, that in several of the low-priced mixed jams, fruit preserves, etc., sesame or gingelly seeds are introduced to represent the seeds of raspberries and strawberries, while apple pulp of even vegetable marrow is actually the predominating ingredient, although two or three raspberries, strawberries, or gooseberries may appear near the surface of the jar. It is, moreover, undeniable that old figs, and other dried fruits which have become unsaleable as such, have been frequently used in the manufacture of

jam. Boiled sago, rice, and similar farina, heavily coloured with logwood chip or other dyes to represent fruit, are largely employed by the makers of 'arts for poor children in low neighbourhoods; but this cruel deception is generally the work of certain unscrupulous pastry manufacturers to be found in most of our large towns, and who make it their special business to supply the smaller general shops.

Almost every housewife prides herself on her jams, jellies, and preserved fruits, but it is very rare that these come up to trade standards of excellency. Old kitchen processes may do for home use, but are far too slow and costly and uncertain for supplying the wants of the world to-day.

With the exception of raspberries it is often difficult or impossible to tell at sight what fruit home-made jams have been made of; the colour is lost, and as a rule the jam is sadly over-sugared and over-boiled. The prevalent notion is that the more sugar it contains and the longer it is boiled the longer and sounder it will keep, but, as shown under "*Fruit Jellies*," the *pectine* is thus ruined and lost. Then, as to the proportion of cane sugar to be added to the fruit. No set rule can be fixed. Much depends on the state of ripeness, and certain fruits—such as grapes, mirabelles, plums, apricots—when fully ripe, contain quite sufficient sugar in themselves, without any further addition.

If jam be boiled over a fire the pan should never be placed flat on the fire, but on a trivet, or hot plate, or the contents are liable to burn. Precaution should always be taken never to add fresh fuel to the fire to finish boiling a panful, or the heat will be checked, smoke caused, and over an open grate the flavour of the jam probably spoilt. A clear fire and good sharp heat is best when steam cannot be employed. The long time required for boiling jam over the fire is one reason why such jam is often noticed to be covered with sugar that has become granulated and has caked on the surface.

Another frequent cause of this granulation is the use of too much sugar, or sugar in large ungainly granules; besides, there are in fruit as well as in sugars active nitrogenous substances which at a temperature considerably below boiling point rapidly convert the sugar into lævulose, etc., which, if the jam be kept, soon crystallise, and give it the appearance of fermentation.

To prevent candying or incrustation most manufacturers add grape sugar, or *glucose*, after boiling, and some a small quantity of gelatine, which gives firmness and coherency to the mass; or, when the jam is potted and set, slightly oil the surface with a little olive oil. Some people use spirits, others rely on making the pots air-tight, but neither of these latter precautions are necessary.

To prevent mould forming at the top of preserves soak the thin paper circles and parchment covers in a solution of salicylic acid and borax, say 60 grains of each dissolved in a pint of hot water, or a solution composed of 1¼ ozs. of formalin to 1 gallon of water will answer the same purpose.

Fermentation mostly arises from insufficient boiling, unsound fruit, or careless and defective covering, by which air is admitted.

Under the name of each kind of fruit may be found further details on the jams and jellies made from them (see page 111). It must be evident to all that steam boiling, honestly done, with cane sugar, makes better and brighter jam than can be produced over the open fire, and that manufacturers dealing with large quantities can thus produce finer and cheaper jam than is ordinarily possible on a small scale by housewives, who generally use beet sugar.

An increasing number of retailers now boil their own jams. The necessary plant is not large or expensive, the quality of the home product can be guaranteed, and it is one of those articles that can be sold at a better profit.

Mixed Jams.—To avoid fines these require cautious labelling, either as (1) "Mixed Jam," (2) Fruit Preserves, (3)

Pure Jam, Raspberry flavour, or else (4) each kind of the fruit used must be clearly named.

Care and good taste is necessary in mixing fruits—red currant and raspberry, raspberry and gooseberry, gooseberry and strawberry, dates and peaches, fig and rhubarb, go well together; also certain combinations with apple, but pears with gooseberries would be horrid.

Apply to Morris & Jones, Sir Thomas Street, Liverpool; and for articles for jams, C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Jamaica Coffee.—A rather large yellow berry, tinged with green. The best is a little stronger than Java and milder than Rio. Inferior samples are of mixed colours, often pale, and the berry flat, liquor thin, but generally possessing a delicate flavour.

Jamaica coffee, like that of Haiti, is mostly of fair quality, and about 25,000 acres are devoted to its culture. The best is raised in the parishes of St. Andrew and St. Thomas. Jamaica exports altogether about 1,000,000lbs. of coffee yearly. Half of it—and that of the better qualities—comes to England; and the other half, mostly cheap and inferior growths, goes to the United States.

In the larger plantations the trees are planted only about 6 feet apart, and by cropping and thinning are not allowed to grow over some 4 feet high.

Jamaica Ginger.—This is the finest ginger known in the market, and realises the highest prices, the best being known as *Plant Ginger*.

The cultivation of ginger in Jamaica, the largest of the British West India Islands, has long received special attention, and it has been found that the production of the best depends largely upon the ground in which it is grown, the deep black soil of the virgin forest being most favourable to it. When the soil has become too poor to grow yellow, or "Plant" ginger, then blue, or ratoon, ginger, an inferior variety, is cultivated. Locally the root is classed as "blue" or "yellow," depending upon the colour of the flowers of the plant from which it is derived. The two plants are botanically identical, but the "yellow" root is said to be better in quality.

Each of these classes is, as stated, divided into "plant" and "ratoon" ginger, the former being the rhizome from plants of the same season's growth, and the latter the rhizomes of plants left in the ground from the harvest of the previous year.

The drying, however, is of more vital importance than the growing, and in wet seasons an evaporator has to be employed to drive off the moisture.

The ginger is harvested just after the stem of the plant has begun to wither, the roots being dug out of the soil and then freed from earth by washing with water.

They are then soaked in water for some time as a preliminary to "peeling," which operation requires great care, as only the outer rind must be removed, or a loss of the pungent volatile oil will ensue. The peeling is mostly done by experts with a simple knife. Peeling machinery have proved a failure. It is customary to have "peeling matches," in which the planter gets all his friends to join, and there is much merrymaking in the sable community. After "peeling" the root is once more washed and then dried in the sun.

No artificial bleaching agent, such as sulphurous acid or chlorine, is at present made use of in Jamaica.

It should have a pale buff hue, a striated and fibrous surface; should break easily, exhibiting a short farinaceous fracture with numerous bristle-like fibres.

The average yield of dried and cured ginger, fit for the market, in Jamaica, is from 1,000 to 1,500lbs. per acre. A good crop may yield even 2,000lbs. As long as the ginger, when dug up, is kept from the sun, it need not be peeled for two or three days. After peeling for the day the roots should be put to soak in plenty of water over night; in the morning washed, cleaned,

and weighed; then put on mats and turned over carefully at midday, and taken in at nights for six or eight days until cured. It takes 3lbs. of green ginger to make 1lb. of dry root. The purer the water the whiter is the product. Sometimes lime-juice is used in the wash-water, which gives a whiter root; but as the lime-juice contains saccharine matter and pectose it prevents drying, and mildew may follow.

When the crop is fully dried it is caried, mostly by women, to the place of sale, which may be from five to forty miles distant. Here it is sold by the "heap," not by measure or weight. A "heap" of ginger varies considerably, according to the law of supply and demand. If the "hands" are finely shaped and large there are fewer in the heap; if small, dark, and snarly, the pile is made larger. Should the price of ginger in London or New York advance it is because the heaps in Jamaica have been diminished, and should the price go down the heaps have become larger. The exporters of ginger assort the produce into four or five grades, the highest being the large-sized hands of light and uniform colour, the lowest being the ratoon finger sorts, which are small, soft, and lacking flavour. Some of the hands weigh as much as 8 ozs.

The following figures represent the exports of ginger from Jamaica for four years:—In 1893, 1,526,884lbs.; in 1894, 1,672,384; in 1895, 1,736,460; in 1896, 1,960,609lbs.

Special Importers of Jamaica Produce.—The Pure Cane Sugar Co. (J. Philip & Co., agents), 4 Fenchurch Buildings, London, E.C.

Jamaica Pepper, or **Allspice.**—Old-fashioned names for *Amomi*, or *Pimento*, which see.

James's Powder. — A patented medicine, consisting of one part of oxide of antimony and two parts of phosphate of lime, mixed and given in doses of 3 to 10 grains

This is one of the commonest and safest forms in which antimony is used.

James's Tea. — Prepared in North America from a species of Erica, *Ledum latifolium.*

Japan Black.—Used for japanning leather goods, etc.; one kind is flexible, the other inflexible.

(1) 4 ozs. burnt umber, 2 ozs. asphaltum, and 2 quarts boiled oil. Dissolve the asphaltum in a little of the oil, add the burnt umber, ground in oil, then mix with remainder of the oil, cool, and thin with turpentine.

(2) 1 part shellac, 4 parts wood naphtha; dissolve and colour with lampblack.

Speciality.—Paton, Calvert, & Co.'s "*Komo*" Black Enamel for grates, etc., Leeds Street, Liverpool. (See "*Komo.*")

Japanese Cement.—A kind of *Rice Glue*, made by mixing rice flour with cold soft water, and then boiling until thick. It dries nearly transparent.

Japanese Date Plums.—See *Kaki.*

Japanese Isinglass (*Agar-Agar*).—A name given to several species of edible seaweed, of which *Gelidium spinosum* is the chief. It contains about 50 per cent. of gelose, and will gelatinise a larger quantity of water than any other known alga.

It requires rather a higher temperature to melt it, and is not therefore very readily soluble in the mouth, but it is often used in the preparation of the cheap jellies made for sale in the shops. It is not nitrogenous, and contains of carbon 42·8 per cent., hydrogen 5·8, oxygen 51·4 per cent.

It differs from animal gelatine in being but slightly prone to undergo change, and other seaweeds mixed with a little of this and made into jelly, sweetened and flavoured ready for use, have long been imported from distant Singapore, and will keep for years. It was first imported into France from China about 1856.

Importer.—M. E. Holdsworth, 3 Norfolk Street, Bradford.

Japanese Chillies.—These seem to correspond with orange-red form of capsicum annuum, var. *conoides.*

Japanese Pepper.—The fruit of the *Xanthoxylum piperitum*, which is esteemed as a condiment in China and Japan, the fruit capsules being agreeably pungent and aromatic when bruised.

Japanese Plums, or Medlars.—See *Loquats*.

Japanese Rice.—The annual crop is from 180 to 200 million bushels, and England imports between five and six hundred thousand piculs a year (133⅓lbs. equals one picul), which is about twice as much as any other country takes.

It is most extensively raised in the valleys of Nippon. The harvest is in November, and the new rice reaches England from February to May.

Japan nets a large profit annually by exporting native rice of superior quality and importing nearly as much of inferior foreign sorts at about half the price from Corea, East Indies, and China.

Japanese Soy.—See *Soy*.

Japanese Teas.—(See also *Teas* and "*Tea of Heaven.*")—Tea is not indigenous to Japan, but is thought to have been introduced there from China about the eighth century. It has only been cultivated in Japan about five hundred years, and it was not until about 1857 that the Chinese method of curing was adopted. The tea grown in Japan is generally of an inferior quality, possessing only an infinitesimal quantity of that comforting but volatile property known as theine. A considerable quantity of green is now prepared, and much of it goes to the United States.

America has always been the largest consumer, and of some 40,000,000lbs. exported yearly from Japan, 30,000,000 goes to the United States and three parts of the remainder to Canada. It should, however, be remembered that no impure or adulterated tea is now allowed to be exported. Every package is inspected by the Japanese Government, who are thus successfully raising the reputation of the article, and severely punishing all offenders.

Japan teas may be roughly divided into three classes: Yokohama leaf, Kobe leaf, and Nagasakis; but the latter forms only a very small part of the whole.

The chief district in the Yokohama teas is the Hacheoji district. These teas are of very fine quality, and little or none of them ever reach this market, being practically all shipped to the United States and Canada. They are of small leaf, very similar to Kobe teas. The balance of the Yokohama leaf teas are generally of flat leaf. The finest teas from all Japan come from the Hacheoji district.

The chief district in Kobe teas is the Yamashiro district. Kobe teas, as a class, are of better style than Yokohama teas, but the latter are, on the other hand, superior in cup quality, grade for grade.

Nagasaki teas are of very indifferent cup quality, dark liquor, and usually highly fired. Teas from this district are generally curly in the dry leaf, and about half the crop is made into Japan Gunpowders.

In Japan teas, as a whole, the earlier the leaf is picked in the season, the better the quality, and the early pickings are paler and more flavoury in the liquor than second-crop teas. Second-crop teas have darker liquor, and are also thicker and have more body in the cup. They are usually of better style, the firers being able to produce better style from the second crop.

Amongst Japan teas may sometimes be found a spurious leaf, usually called "cabbage," not discernible in the dry leaf, but giving a rank and offensive flavour to the liquor whenever it occurs. This so-called "cabbage" is really the leaf of a convolvulus, which climbs over and about the tea plants, and occasionally a leaf of it is accidentally picked and cured with the tea leaves proper. It occurs more frequently in some districts than in others.

The preparation of Japans differs

from that practised in China, in so far that the Japanese farmers pick the leaf and only partially fire it, packing it in large china vases, in which it is brought down and sold, in its half-fired state, to the large tea-firing and shipping houses at the coast, where the firing is completed by the European, American, and Japanese shippers in their own premises, with Japanese labour.

The Japanese generally reduce the tea leaves to powder before brewing with boiling water, and this plan is sometimes adopted in China.

It is stated that the best results are obtained when the powdered tea is infused for about five minutes in moderately hard water the moment it comes to the boil. The flavour is then exquisite, the theine is completely extracted, and very little tannin, whilst no loss of body or strength is perceptible.

The *Yushin Nippo*, in a recent article on the necessity of cleanliness in the manufacture of foods, draws attention to the dirty habits of the men and women employed in the tea-firing godowns. The class employed is generally poor and badly clothed, and the adoption of strict measures of cleanliness may lead to a decrease in their numbers, with the compensating advantage, however, of an advance in wages to those that remain. Anyone who witnesses, continues the *Yushin*, the filthy ragged people, the women with dirty babies on their backs, going in to the tea-firing godowns, must surely feel some disgust, and if such a state of affairs is allowed to continue it will certainly have a bad effect on the tea trade of Japan.

Japan packages average about 65lbs. each.

Japanese Waxes.—(See also *Vegetable Wax.*) — Japan wax—sometimes called Sumach wax—is obtained from the tree *Rhus vernicifera*, or *R. succedanea*, which is found in China, Japan, and throughout the East Indies generally.

Japan wax has only been on foreign markets for about thirty-five years, but has rapidly become an important article of trade. It is extracted from at least four plants—*Rhus succedanea*, *R. vernicifera*, *R. sylvestris*, and *Ligistrum ibota*.

The trunks of the second of these species, called *Wrushi* in Japanese, furnish the famous Japanese lacquer, and, as it cannot be made to furnish that as well as wax, it is usual to call upon it only to supply lacquer, which it alone can do, and to rely upon the three other species for wax. *R. sylvestris* (*yamahaze*) and *Ligistrum* (*ibota*) are common enough, but they are not made much use of, as their yield of wax is small. Practically, then, *R. succedanea* is depended upon for wax almost entirely. It is principally cultivated in the islands of Kiousiou and Thikshou, in the centre of Nippon, and it grows well both on plain and mountain, and especially in sandy, gravelly soils. The young plants are raised from seed, and become productive at the age of seven years, giving at first from 7 to 15lbs. of fruit per foot in height, but later from 55 to 80, and sometimes even as much as 200lbs. At the age of forty the yield of the tree begins to lessen, and it is cut down at about a yard from the ground and the stump is grafted. The flowers appear in April and the fruits ripen in November. The fruits yield about 2 per cent. of their weight in wax. The fruits are never treated for the extraction of the wax until the April following the harvest. The wax improves as the fruit gets older. They are first thrashed and winnowed, to free them from stalks. They are then ground to the finest possible flour, with repeated sifting and regrinding of the coarser particles till everything passes through the sifter. To get the best wax the seeds must be removed from the fruits before they are ground. To extract the wax the flour is steamed on a hempen cloth stretched over boiling water, and then compressed in a special apparatus. This consists in the main of a metal cylinder

with square wooden rods arranged vertically round its internal surface, and having a hole in its bottom for the wax to run out at. The flour is placed inside the rods in a hempen bag, and then the pressure is applied. The oil cake can be broken up and again pressed, but the second lot of wax is inferior to that first squeezed out. The second residue forms an engrais, or is burnt to furnish the lye required for the bleaching process. The wax is bleached by melting the dark yellow raw product, and adding to it one-fifteenth part of its weight of water. After decantation a lye is added, and the molten wax is poured in a thin stream into cold water. It is then dried in the sun on screens. There it is stirred every day with a rake, and completely turned over twice a week. It is sometimes necessary to sprinkle the screens with water to prevent the solar heat from melting the wax. After two or three weeks the wax is ready for the second fusion (*nakain*), which only differs from the first (*aodashi*) in the fact that no lye is used. At the end of two or three weeks more the wax is fused for the third time, after a last insolation, and cast into rectangular moulds and allowed to cool very slowly. At that stage it is sometimes mixed with a little oil to make it less brittle. It is now ready for the market.

In making candles of this wax, which the Japanese still do in spite of the necessity for snuffing them constantly and of their evil smell, the crude wax is almost exclusively used; but as European candles replace these native ones the Japan wax will be more and more largely exported. A large number of foreign middlemen already exist, but the Japanese are forming syndicates to export directly themselves. It is difficult to obtain reliable statistics as to what the production of this wax used to be in Japan. In 1876 it probably did not exceed 4,000 tons, but in 1887 reliable figures give it as 11,000 tons, about half of which came from the department of Fukuoka. As to the value of the exportation, it has fluctuated fairly regularly, up to 1891 between £40,000 and £60,000. It is now much more. It takes place principally to Hong Kong, the English having secured the middleman's place.

It has often been found adulterated with starchy materials to the extent of 20 to 25 per cent.; but this adulterated compound is free from the peculiar network of minute cracks which as a rule characterise the surface of the pure wax, and has a higher specific gravity.

Its preparation is one of the principal industries of Kinsin, the best coming from the province of Hizan.

A white wax, secreted by the insects *Ericeris-pela*, is also obtained in Japan. (See *Chinese White Wax*.)

Kaga wax is obtained from *Cinnamomum pedunculatum*, and is softer than ordinary Japan wax, but is not exported.

Apply to C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Jardinieres.—A French name for small bunches of vegetables and herbs made up by greengrocers from young turnips, carrots, spring onions, French beans, leeks, etc., etc., all fresh, clean, and tender, ready for use in making soups, broths, garnishes, etc.

Jatropha Manihot.—One of the names for the plant from which Cassava meal is obtained. The juice also furnishes Cassava starch and tapioca. (See *Mandioca*.)

Java Coffee. — An East Indian variety of coffee, cultivated under the Dutch Trade Association, which is in turn controlled by the Government of Holland, and obliged to ship all that is raised of the first quality to Holland, where it is graded and sold at Amsterdam or Rotterdam by Government auctioneers to the highest bidders, whether German, French, or Swiss, all of which are large consumers and will pay big prices for it.

Europeans are indebted to the Dutch for their first acquaintance with the coffee plant. This was brought about

in the following manner: Some berries which had been procured were carried to the Island of Java and there planted. A specimen plant was sent home to Amsterdam in 1690 by Governor Wilson. This plant bore fruit, from which many young trees were propagated, and from this original most of the gardens of Europe and the East Indies are supposed to have been furnished.

Very little of the best Java coffee comes to England. The quality depends very much upon the districts in which it is grown, as with wines, tobacco, etc., and in a very great degree upon the curing the berry receives, some of the Government qualities being turned and browned in the sun for three or four years before being shipped for market. This treatment gives them age, colour, strength, and richness of flavour, which qualities give this brand of coffee its peculiar character and value.

The Dutch Government allows about 25/- per picul (133⅓lbs.) to the natives for cultivating the coffee, and the natives generally do this in lieu of paying taxes.

Java coffee berries are of a large oblong form, varying in colour from whitish to pale yellow and greenish. It is considered a very fine species, producing a strong and clean liquor, and second only to genuine Mochá.

Java Sugar. — Annual production about 600,000 tons. There are about 190 manufactories, viz.:—
106 in East Java, making 350,000 tons.
53 in Central Java, making 180,000 tons.
30 in West Java, making 70,000 tons.
The area occupied by the sugar cane culture is about 70,000 hectares.

Java Tea. — The cultivation of tea in Java was begun in 1826 from Japanese seeds and plants; but Indian seed and the Indian method now prevail, and the business is increasing rapidly, especially in the Preanger district. The trees are never allowed to exceed 2½ feet in height, but they are very prolific, an acre yielding about double as much as in India. They are grown 3,000 to 4,000 feet above sea level. Java teas yield a substantial liquor, and the taste of some of them is attracting the attention of many dealers. The export in 1898 was about 70,000 chests, and the average price about 6d. per lb. Much of it is really sold as genuine Assam. The finer kinds are often marked "Japan Pekoe" and the lower kinds as "Japan Congou."

Jellies. — F. *Jelées;* G. *Klare Sulzen;* Port. *Gelêas;* Sp. *Jaleas.*

This term is generally applied to substances, either vegetable or animal, which are liquid or semi-liquid while warm, and become stiff or gelatinous on cooling. There are so many kinds of jellies that they have been divided into several headings, and will be found under *Aspic, Black Currant, Calf's Foot, Fruit, Guava, Red Currant,* and *Table Jellies.* All vegetable jellies have pectine as their base, while animal jellies have gelatine.

A few years ago nurses, and even doctors, thought that jelly was the most strengthening of foods, but other opinions now prevail, and jellies (though still prized as valuable articles of food) have had to abate many pretensions. (See *Gelatine.*)

"*Jelly Squares.*"—The base for these is in many cases tengusa seaweed. The seaweed is carefully washed and boiled to a gluey decoction, which is strained off and put into square boxes. When cool it forms a stiff jelly, which can easily be divided into squares a foot in length. The manner in which the surplus water is removed is very ingenious. The jelly prisms are exposed in the open air during a cold night and allowed to freeze; during the day the sun melts the water, which runs off, leaving behind what one might term the skeleton of white, horny substance, which is extremely light and easily dissolved in hot water. When cold it again forms a stiff jelly.

This article is applied to many purposes—for culinary preparations, for making bonbons and jellies, for clarifying liquids, as a substitute for animal isinglass, for making the moulds used by plaster of Paris workers, etc., etc. With the addition of sugar, colouring matter, and flavouring essence all kinds of jelly squares are thus easily made.

Cheap Jellies are also made as follows:—Take 20lbs. of sugar, 65lbs. of glucose, 12lbs. of starch, and 12 gallons of water; use a sufficient amount of the water to dissolve the starch thinly; add the balance of the water to the sugar and glucose, set it on the fire or in a steam pan. When it arrives at the boiling point add the dissolved starch and about three-fourths of an ounce of tartaric acid, this dissolved in a little water; also add the colours and flavours desired; evaporate to a good body or until the goods will leave the finger in cold water. This will be a stiff jelly, and should be poured out into trays and spread to even thickness, then set aside until cold. Oil the trays well and then sprinkle well with pulverised or granulated sugar before pouring the goods into them. When cold turn the trays upside down on a slab and the goods will drop out; then with a sharp knife cut the batch into squares, diamonds, or sticks, and while moist throw them into granulated sugar, cover them well, then sift them carefully and set away to dry. If you desire to run this same jelly into starch prints, do not evaporate so high.

But the bulk of the jellies made—the article which is bought by the masses—is a fraudulent product, and is a great money-maker for the firms that put it on the market. No matter what kind of jelly is asked for, or what flavour is wanted, it is all made from the same basis, and doctored to suit the requirements. The proportions used in making the general "basis" for all kinds of jellies are as follows:—Glucose, 50 per cent.; sugar, 10 per cent.; and apple juice, 40 per cent. Some acids are used in the manufacture of jellies, but it is not for the purpose of giving tartness to the taste. The only object the acid accomplishes is to make the substance jellify more quickly.

Apply to the Pure Cane Sugar Co. (J. Philip & Co., agents), importers of West Indian Products, 4 Fenchurch Buildings, London, E.C.

And for Materials for jellies.—C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Jeraad.—A food consisting of preserved locusts. In certain parts of the world where these insects frequently abound (as in Morocco) they are collected, filled into sacks, and sold for food, like prawns or shrimps in England. They are first boiled in salt and water, then fried and parched, and in this form are considered "clean" by the native Jews and Mahomedans, and esteemed as a convenient form of food for travellers to take with them on the road.

Jersey Tea.—See *New Jersey Tea.*

Jerked Beef.—Beef cut into thin slices and dried in the sun. (See *Tassajo*, also *Pemmican.*)

Jerupigia.—See *Geropiga.*

Jerusalem Artichokes.—F. *Topinambours*; Ger. *Erdartischocken.* (See also *Artichokes, Chinese Artichokes*, etc.)

These are not really artichokes at all, do not take their name from the city of Jerusalem, nor have they any connection with it, but are simply the tubers of a species of sunflower (*Helianthus tuberosus*), long known in Italy as *Girasole* (turnsole), or turner to the sun. They are often used as a substitute for potatoes, and when cooked have a peculiar sweet watery taste, very like that of genuine artichokes, and hence the name.

The plant—a composite one—is a native of Canada and the upper

Mississippi river, but has become a well-known and prolific garden vegetable in England, although much more extensively grown in Belgium and Holland. In cultivation, the tubers are first planted in rich ground well exposed to the sun, in rows 3 feet apart, and 18 inches apart in the row. When young they contain a considerable amount of phosphoric acid and potassa.

It is a perennial plant, and the stems, which grow to a height of 4 to 6 feet, are, with the leaves, generally used as fodder for cattle.

Cultivators should remember that the white-tubered variety has the nicest shape, is a good cropper, keeps well, and will grow anywhere.

Perhaps the best kind is "Sutton's White," with whiter skin, shallower eyes, and better shape than most of the other varieties.

In some parts of France Jerusalem artichokes have been used for the distillation of alcohol. They contain no starch, so do not become floury on boiling, but yield a soluble substance resembling starch, and known as *Inulin*. They contain a large proportion of sugar, and are cheaper than potatoes. It is to be hoped that the alcohol thus made will be applied to legitimate purposes, such as the manufacture of varnishes, methylated spirits, and transparent soap. In France its distillation is carried on somewhat considerably, the plant being grown very easily, and in places where potatoes would rot. The Cape farmers find them an excellent root-fodder for cows in milk, also for pig-feeding.

Jesuits' Powder.—See *Quinine*.

Jesuits' Tea.—Obtained in Chili from the leguminous plant *Psoralea glandulosa*. (See also *Maté*.)

Jewellers' Cement.—Dissolve over the water bath fifty parts of fish glue in a little strong spirits of wine. Add four parts of gum ammoniac. Separately dissolve two parts of mastic in ten parts of spirits of wine. Mix the two solutions and keep them in well-stoppered bottles. In order to use this it must be warmed over the water bath.

Jewellers' Rouge.—(See also *Toilet Rouge*.) — A scarlet and impalpable polishing powder.

The genuine kinds are prepared from peroxide of iron by heating the yellow oxalate of iron till it decomposes. The carbonic acid escaping, only this fine red powder is left. (See *Red Crocus Powder*.) Jewellers' rouge may be recommended to polish silver or gold ornaments, plate, and specula without injuring them. A very good plate rouge may be made by mixing equal parts of precipitated subcarbonate of iron and prepared chalk.

Occasionally some injurious compounds have been sold under the name of jewellers' rouge.

For materials, apply to C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Jewellers' Sawdust.—This is the sawdust of boxwood, and is used for brightening and drying gold chains, etc., which when placed in it are well shaken, and afterwards brushed. This sawdust is much improved by drying it well in the oven before use.

Jew's Apple.—An American name for the *Egg Apple* or *Egg Plant*. (See latter.)

Joar.—See *Millet Seed*.

Johannisberg, or *Schloss Johannisberg* (as the highest grade is termed), is a rare white "cabinet wine" produced in the environs of a village of that name on the banks of the Rhine, in Germany. It has been famous for centuries.

The grapes are grown in the Rheingau district, under the walls of the old abbey of Johannisberg, the vines yielding this "crême de la crême" actually growing close to and over the cellars where the wine is stored. The much-envied estate belongs to Prince Metternich, and consists of 62 acres, which are cultivated with scrupulous care.

Johnny-Cake, or Tortilla.—(See also *Maize Bread*.)—A simple kind of

bread, very popular in the United States, Central America, and Mexico. It is made by soaking three cups of yellow corn-meal (Indian meal) in four cups of sour milk, or butter-milk, overnight, or for six or eight hours. In the morning add half a teaspoonful of salt, a tablespoonful of brown sugar or good molasses, one egg, and a large teaspoonful of carbonate of soda. Beat the batter well, and it will be quite thin. Pour it into two shallow biscuit pans and bake from half to three-quarters of an hour in a hot oven, and serve at once with butter, treacle, or other savoury food. In Mexico and Central America it is called Tortilla, and often made into sandwiches with meat or a sauce of tomatoes and Chili pepper.

Johore Teas. — The Sultanate of Johore is the only independent Malay kingdom on the peninsula, and the tea grown there, a hybrid Assam, is considered fully equal to any produced either in Ceylon or elsewhere.

'Jonathan."—An adulterant sometimes added to barley meal, Indian meal, etc. It consists of calcined and ground oat-chaff, and whether eaten either by man or animal is very indigestible and liable to irritate the intestines so as to bring on inflammation.

Jordan Almonds. — (See also *Almonds.*)—The most esteemed variety of sweet almonds. They take their name not from the River Jordan, but from a corruption of *jardin*, or garden, to distinguish them from uncultivated almonds, and are grown in the Malaga district of Spain. There are two sorts, one large, flat, and oblong in form, while the other is remarkable for its brittleness. They are more plump, less pointed at one end and less rounded at the other. If split open there will be observed on one edge of the seed, near the narrow end, the remains of the funiculus, or seed-stalk, which extends half way down the seed to the point of attachment to the shell or ovary. Jordan almonds have also thicker and harder shells and somewhat paler skins than other sorts, and are more delicate in flavour. The shells containing the sweet kernels are all cracked by hand, giving employment to large numbers of girls. Imported, without the shell or endocarp, from Malaga in 25lb. boxes.

Jordan almonds appear to be getting smaller in size every year, and this is explained by the British Consul at Malaga to arise from the fact that the medium and lower grades only are now cultivated, the production of *firsts* and *seconds* being almost *nil.*

Jowarree.—See *Millet Seed.*

Jugged Hare. — F. *Lièvre à la Daube.*

This is sold in tins as a breakfast delicacy. The hare is usually cut up into small neat joints, dredged with flour and fried brown. It is afterwards simmered for about two hours with beef gravy, onion, lemon, cloves, pepper, salt, and cayenne. Sometimes small forcemeat balls and a little port wine are added.

Juice.—See *Liquorice Juice.*

Jujubes.—(See also *Gelatine Sweets, Gum Drops,* etc.)—The word jujube has *three* separate meanings. Firstly, it is a name given to several species of plants of the genus *Zizyphus*, which grow in Syria and Southern Europe. Secondly, to the fruit of these plants. A well-known one is that common jujube shrub, *Z. vulgaris*, an olive-shaped fruit about the size of a small plum, red or yellow when ripe, and used as a sweetmeat, and from the juice of the fruit a lozenge is prepared by confectioners. Thirdly, and chiefly, the word jujube is applied to a confection, sweetmeat, or medicated lozenge, round, oblong, or square in shape.

The low-priced are supposed to be made of gluten or gelatine, water, and sugar, and flavoured with various fruit essences or similar mucilage; the *best* from fine gums, such as gum Arabic or gum Senegal, flavoured and sweetened, perfumed, medicated, or otherwise treated with a decoction of the jujube fruit, when they form valuable

remedies, or preventives, for sore throats, chests, etc. They are also used for coughs, fevers, etc.

How to make ordinary quality:—Dissolve 4lbs. good powdered gum (Turkey or East India) in three pints of water, well stirred in a gentle heat, remove scum, and after cooling slightly, strain it through a fine hair sieve. Next boil 4lbs. loaf sugar (with a little cream of tartar) to the "crack," then add the dissolved gum; keep stirring it and let the whole mass evaporate gently to the small pearl, or 30°, by the saccharometer, for half-an-hour, skim again and add the colour, jujube decoction, or flavour required. Then pour ½ inch deep into oiled shallow tins, dry for two days; afterwards cut into long strips and finally into regular squares with scissors or knife.

Special Manufacturers.—J. Epps & Co., Ltd. (glycerine jujubes), 48 Threadneedle Street, London, E.C.

Julienne (pr. *Zhool-yen*).—A celebrated French mixture of dried vegetables and herbs. The name is from that of Mme. Deschamps, a Paris market woman, who died in 1897 at the age of 94. She supplied vegetables to the Tuileries during the reign of Charles X. and Napoleon III., and her mixture of herbs became popularly known as "Julienne." The notion was improved upon by Chollet & Co., in 1848, according to a selection of vegetables and herbs suggested by the renowned *chef* Soyer, Chief Inspector of Cookery to H.M. Forces in the Crimea.

It consists of carrots, turnips, onions, cabbage, parsnips, leeks, lettuce, celery, etc., with a little sorrel and parsley. Sometimes asparagus tops, green peas and French beans are added. The vegetables are cut while fresh into thin strips, not unlike matches, and the lettuce, sorrel, and leaves of chervil into larger pieces. Each kind of vegetable is dried separately, and the whole afterwards mixed together in the proper proportions which constitute the secret of manufacture.

It must be admitted that, notwithstanding the fame of our English gardens, and the keen enterprise of manufacturers, both British and foreign, the appetising fragrance and delicacy of Chollet's French Julienne has never yet been equalled. It is made at Meaux, in France, and still remains pre-eminent in the first hotels and in all aristocratic *cuisines*, owing to its superiority over all imitations.

Messrs. Ch. Prevet & Co., the successors of Chollet & Co., have had for many years past a depôt in London (134 Fenchurch Street, E.C.), and seem determined not only to uphold but to extend the prestige of their well-known brand.

There are some cheaper sorts in the market, but most of them are incongruous mixtures of the commoner and coarser vegetables, which no retailer who values his business should risk sending to a high-class cook.

Julienne is sold, wholesale, in 1lb. packets, in bags of 28lbs., and in sacks of 1 cwt. The sacks are chiefly bought by soup manufacturers, hospitals, workhouses, soup kitchens, and schools, the bags by hotels, restaurants and clubs, but the *1lb. packet*, which bears plain "Directions for Use," is in the form in which the public ask for it from the grocer. It also keeps better in this form, and free from dust or waste.

Julienne is also sold, for export, in a compressed form. (See *Compressed Vegetables.*)

Caution.—Julienne must be kept in a *very dry* place.

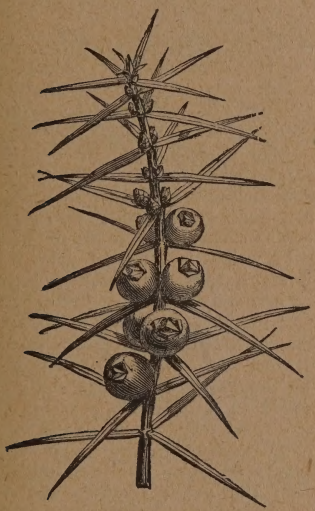
Juniper Berries. — Du. *Genèvre Bessen;* F. *Baies de Genièvre;* Ger. *Wachholder-beeren;* Ind. *Abhul;* It. *Cocole de ginepro;* Sp. *Granos de Enebro;* Sw. *Enbuske.*

The fruit of the low fine-leaved resinous shrub or tree, *Juniperus communis.* It is related to the cypress, and grows wild over many of the hills and heaths throughout Europe.

There are at least a dozen species from which these berries are gathered, but the most remarkable is the above, which is found in many parts of this

country upon dry barren commons or on chalky sandy lands. In cold situations this bushy evergreen may grow 15 to 20 feet high, but seldom attains more than 3 to 6.

The berries require two years to grow and ripen, are of dark purple colour, about the size of currants, and contain three small stones.



JUNIPER.

Considerable quantities of juniper berries are imported from France, Italy, Holland, and Germany. They have a strong, but not disagreeable, smell, and warm pungent sweet taste. The pungency seems to reside in the skin, the sweet in the juice, the bitter in the seeds, and the oil in the pulp. Juniper berries should be chosen fresh, round in form, and not much shrivelled, also free from mould. Prices, 7/- to 10/- per cwt.

Juniper Oil. — A volatile essential oil, very subtle and pungent, distilled with water from juniper berries, also from the tender tops or *shoots* of the plant itself, but this must not be confounded with *Cade Oil*, made from juniper *wood*. Oil of juniper wood is commonly prepared by distilling turpentine over juniper wood.

Juniper oil is composed of terpenes and a solid camphor-like body.

The berries for distillation are gathered while green, but full grown.

The unripe berries probably yield the most oil, but this oil is very inferior to that obtained from the ripe fruit.

The oil is of a pale greenish colour, and a warm aromatic taste, with a strong flavour of turpentine, and, in fact, juniper oil is often adulterated with the latter.

When the oil is freshly distilled, it will dissolve in four times its volume of 95 per cent. alcohol, but when a few weeks old it is less soluble.

An evaporated cold infusion of juniper berries is sold by the druggists under the name of *German treacle*. The principal use made of juniper oil is in manufacturing or flavouring gin, Hollands or Schiedam.

Junk.—The outer covering of the coco or coker-nut reduced to a mass of threads, a rough kind of oakum, used for caulking the seams of a ship and making mats, etc.

Jur Nuts.— See *Ground Nuts*.

Jute.—Fibre of the jute-plant, largely imported from Bengal, and made into bags, ropes, etc.

K

Kaffir Corn.—See *Millet*.

Kaffir Tea. — An African product obtained from the leaves of *Helichrysum nudiflorum*. It is demulcent, and considered good for pulmonary complaints.

Kaiffa, or Oriental Fecula. — An alimentary preparation used largely throughout the East in making potages. It is usually a mixture of potato flour, sago, saleep, rice-flour, cocoa, sugar, and

either lichens or gelatine. The whole is generally flavoured with vanilla or other aromatic. Different manufacturers have their special brands and names for analagous compounds.

Kail. — See *Cabbages.*

Kaiserlautern Beer.—See *Beers.*

Kaki, or Japanese Date Plum.—This fig-like fruit (*Diospyros costata*), of which there are a great number of varieties, is nearly allied to the persimmon (*Diospyros virginiana*), but much superior.

It is very common both fresh and dried in China, where it is called "Tsze" or "Sze," and is fairly abundant about Florence, in Italy. The word *Kaki* is from *Chaki*, the Japanese name for the fruit. The best known varieties are *Tame*, *Nashi Yemon* (seedless), *Hyakume*, *Yedo*, *Ichi*, and *Kurokumo*, and these are now cultivated extensively in Florida and other parts of America, also in Adelaide. The plant sprouts very freely from the seed, and is afterwards grafted upon the seedlings of the wild persimmon. They are gathered some time before they begin to soften if intended to go distances, but like other fruit they are much better flavoured when fully ripe.

Kalamboki. — A Grecian name for *sorghum*, or Chinese sugar cane. (See *Sorghum.*)

Kalydor.—A fancy name given to several nostrums widely advertised, and pretending to possess extraordinary powers of beautifying the skin. (See *Rowland's.*)

Kapok Oil. — A vegetable fat expressed from the seeds of the *Bombax pendundrun*, a plant belonging to the *Malvaceæ*. It is related to the cotton tree, and the seeds are very similar. It flourishes throughout the East and West Indies, where the oil or fat is used for culinary purposes. Kapok Oil is, however, chiefly used for soap making in this country, and is brought into the European markets by the Dutch.

Kari. — A Continental mixture of ground pepper, pimento, and turmeric, flavoured with clove and cinnamon. This powder is commonly steeped in vinegar and used as a sauce.

Karita, or Karite. — See *Shea Butter.*

Kava Kava, or Yava Pepper. —The root of *Piper methysticum.* (See *Ava.*)

Kauri, or Kourie Gum. — Also known as Dammar, or Australian copal. This is the gum resin which exudes from the *Dammaris australis*, or Kauri pine, the finest and most useful kind of tree found in Australia and New Zealand.

These magnificent trees grow 120 to 180 feet high, and the dull amber gum or resin is often found in lumps of 50 to 100lbs. weight in the ground far from any present trend, but where forests of these large coniferous trees, have formerly grown and died.

Although a true resin, this is usually called *gum.* It is the solidified turpentine of the kauri, and occurs in great abundance in a fossil condition in the northern part of the Auckland Provincial District, from the North Cape to Middle Waikato, and is dug up alike on the driest fernhills and the deepest swamps. The purest samples are found on the Cape Conville Peninsula. A large amount of an inferior quality is also obtained from the forks of living trees. The fossil resin occurs in lumps from the size of a walnut to that of a man's head, but three specimens weighing over 300lbs. have been exhibited.

When scraped the best is of rich brown colour; sometimes it is transparent or mixed with leaves, seeds, or insects enclosed. The dark resin found in swamps is almost black, and only fetches a very low price. The most transparent is the highest priced, and often used instead of amber for the mouthpieces of pipes, cigar holders, etc.

The digger's equipment is a gum

spear or pointed iron rod fixed in a handle to test the ground; the gum is then dug out with a spade, and carried home in a sack. Some dig over an entire area. An old knife is used to scrape the gum, and the scrapings are used in making fire-kindlers. Wages about 27/- a week, living 10/-, savings 17/-.

It is invaluable in varnish making, dressing glazed calicoes, and the great bulk is exported from Auckland for these purposes. Its specific gravity is 1·080, and its melting point about 400° F.

Fifty years ago its value was unknown, and the first cargo (some 800,000lbs.) exported to New Bedford, Mass., in 1849, laid there for three years before 100,000lbs. could be sold at 2½ cents a pound; four more years elapsed before the last 8,000lbs. were sold at 35 cents a pound. In 1860 it only brought £9 a ton, but the price in 1893 had run up to £61 a ton.

When its value was first discovered Kauri was collected by the Maoris, but "whites" now do a large portion of the digging.

Kay's Compound Essence of Linseed.—This medicine was patented in 1873 by Mr. Kay, a Stockport chemist, but three years afterwards the patent lapsed. Under the Act then in force a fee of £50 was necessary, and this was not paid. It therefore is no longer a patent medicine. Each bottle contains about one-seventh of a grain of morphia, and as that is the chief active principle it must only be sold by registered chemists.

Kazan Soap.—A Russian toilet soap, made largely from the less pure and very yellow qualities of egg oil. This soap is very high priced, and is only used by the wealthy classes as a luxury. It is regarded chiefly in the light of a cosmetic, and is a much valued addition to a Russian lady's toilet necessaries.

Keating's Cough Lozenges.—These are said to consist of lactucarium, 2 dr.; ipecacuanha, 1dr.; squills, ¾ dr.; extract of liquorice, 2 ozs.; and sugar, 6 ozs.; made into a mass with mucilage of tragacanth, and divided into 20-grain lozenges.

Keg, or Cag. — F. *Fût, Caque;* Port. and Sp. *Barica.*

A general name for any small cask, dry or wet, holding less than 10 or 12 gallons.

A keg of spirits means abou 5 gallons.

Kei Apples, or *Dingaan Apricots.*—The berries of *Aberia Caffra,* imported from Africa. In their fresh state they are very acid and often used alone as pickles, but when preserved with sugar form a most agreeable jam.

Kelp. — Ashes of seaweed, or, in other words, a collection of marine plants, cut from the rocks off Ireland and Scotland, with a hook, gathered and dried on the beach, and afterwards put into kilns, where they are melted by the heat. They are then agitated with iron rakes, and, when cooled, condensed into a dark blue or greenish mass, hard and compact. It yields about 5 per cent. of its weight of soda, and used to be very valuable, but is little used for that purpose now.

Kerosene, or Astral Oil. — An American name for petroleum which has been extra-refined for illuminating purposes.—This name is also the popular one in India, China, Japan, and other regions where the hydrocarbon kind of oil has been introduced for domestic uses. The best should be almost colourless, and its flashing point 149° F.

Kerosene, also, is highly recommended as a hair restorer, preventing it falling off and often renewing the growth over bare patches.

In certain districts of China—Chefoo, for instance—the farmers in sowing seeds allow a few drops of kerosene to fall on the seed as it lies in the drill to protect it against insects apt to feed on the seed or tender plants.

Ketchup or **Catsup** (from the Japanese word *kitjap*).—Names gene-

rally applied, in conjunction with the fruit or vegetable substance forming their base, to a variety of sauces or condiments.

When an article is merely labelled or described as "Ketchup" or "Catsup," without fuller definition, it may ordinarily be considered to be made up artificially, and should be carefully tested.

The kinds usually sold are:—Camp, cucumber, marine, mushroom, oyster, pontac, tomato, walnut, wine, etc. Most of them are described under their respective titles.

Apply to Charles Cocks & Co., Reading, Berks.

Kid Revivers. —The following is an outline of their manufacture:—

Dissolve 9lbs. of Marseilles soap in a gallon of water, then add 1½ gallons of a clear solution of chloride of lime and a pound of sal ammoniac. Mix thoroughly.

Kiel Butter.—Kiel is a fortified seaport town in Schleswig-Holstein, Prussia, and situated on a fine bay of the Baltic, about 53 miles N.N.E. of Hamburg.

It has long been celebrated as an export centre for superior butters, but the term "Kiel" butter has gradually been widened till it seems to include any or all butters shipped on the North Sea and the Baltic, especially Hamburg factory butters. Indeed, it is also often applied to Irish or other sorts, which are merely sold in those peculiar sort of casks called "kiels" or "keels." Hence we have "kiels of butter" as well as "kiel butters." The word has now really lost its value as a descriptive title.

Importer.—R. Rutherford, 112 Whitechapel, Liverpool.

Kieselguhr, Diatomite, etc. — Kieselgühr, from *Kiesel* (silica or flint) and *guhr* (fermentation), is the German name for an infusorial earth, very light and porous, found in several parts of the world, but the largest quantity at Naterleuss, between Hamburg and Hanover. At Bilin, in Bohemia, there is a bed of it 14 feet thick; another at Richmond, U.S.A., 30 feet thick. Vast beds also occur at the bottom of the South Pacific. Similar deposits, known as *diatomite*, are found near Aberdeen in Scotland, South Mourne in North Wales, also at Randan in France, where it is called *Randanite*, and in Norway, where it is called *Bergmehl*. Its porous structure makes it look as if it had been "raised" by yeast, like bread. It consists entirely of the silicious skeletons of very small plants called diatoms, many of which are too small to be perceived by the naked eye. The deposit at Naterleuss reaches from the surface to a depth of 150 feet, and is in three distinct parts. The best Kieselgühr is found on the top mixed with sand and a little organic matter, which are separated by levigation. The middle layer is grey, with less of sand and more of organic matter, but the lowest and main deposit is of greenish colour, and varies from 50 to 100 feet in thickness. These are burnt in furnaces like peat, and raked out at the bottom. It assumes a ruddy brown colour, interspersed with atoms of white silica. Kieselgühr, being thus purified, has many uses. Being an excellent non-conductor of heat, and incombustible, it is used for stuffing the linings of fireproof safes, wine cellars, ice boxes, and refrigerators; also as a packing for boilers, steam-pipes, and retorts, filters for water, and sugar refining. It has been found to be a good absorbent of carbolic acid, and is consequently largely used in the manufacture of disinfecting powders.

Much is also used in the manufacture of dynamite, water-glass, metal polishes, and numerous other purposes.

Sold wholesale by C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Kilo. — An abbreviation of the French word *Kilogramme*, equal to 2lbs. 3 ozs. English; 50 kilos equals 110lbs.; 12½ gallons water, wine, vinegar, etc., weigh about 50 kilos.

Kino. —An astringent extract in the form of shining grains of a deep brownish red colour, obtained from various Australian and Indian trees. It really consists of tannin and other extractives, and in India is used for dyeing cotton a nankeen colour; also employed in medicine.

Kippered Herrings. —F. *Harengs Saurés.* (See also *Herrings.*)

A name for herrings which are first split and flattened out like finnon haddocks, and then slightly salted, dried, and smoked.

They are sold by the score or dozen in boxes, or else packed in flat tins to retail at about 8d. each.

Kips. —See *Chamois Leathers.*

Kirschbranntwein or **Kirschen.** —German names for *Cherry Brandy*, which see.

Kirsch or **Kirschenwasser.**— F. *Kirsche.*

A sort of Cherry Brandy, a thick white spirituous extract, very pure and sparkling, with excellent and wholesome qualities.

It is made at Griesbach and Petersthal, in the Reuch Valley, Strasbourg, and in other parts of Germany, but chiefly in the Black Forest, from small black wild cherries, a kind of Morello cherry, the fruit of the *Prunus avium* (a Machaleb variety).

When the cherries—ripe and unripe, sound and rotten—have been crushed and begun to ferment in a wooden vessel, they are stirred, two or three times daily, for a short period; the stones are also broken and the kernels crushed, and it is from this pulpy mass the famed and powerful spirit called Kirsch is distilled and rectified.

It owes its peculiar flavour to cyanic acid, a poisonous element present in the kernels of most stone fruits; but it is sufficiently diluted with distilled water, and very slightly sweetened with liquid glucose. It has the reputation of assisting digestion, and has the curious property of decomposed fruit when added to it in bottle.

The best qualities contain about 0·15 grm. prussic acid per litre, but inferior makes often contain three or four times as much.

It is a very common and favourite liqueur with the Swiss, and large quantities are made at Montreux, but the principal distilleries in Switzerland are in the cantons that produce the best cherries—viz., Basle, Lucerne, Schwytz, and Zug, where many of the farmers also make it. Both black and red cherries are used, but the former are best. They are first very carefully cleansed and the stems removed, then packed in very thick wooden casks and left to ferment five to eight weeks, according to the weather, after which distillation is effected. The larger distilleries hasten the fermentation by steam, while others employ naked fires of peat or cherry refuse. The Kirschenwasser is marketed in litre (1·76 pints) bottles, in carboys of 10 to 60 litres, and in casks, and the wholesale prices vary, according to the cherry season, from 1/6 to 3/- per litre, but is generally adulterated with 5 to 75 per cent. of German potato spirit, and is exported largely to America, India, and France.

Factitious kirschwassers are also made in France of dilute alcohol, sweetened and flavoured with peach blossoms, cherry-laurel leaves, oil of bitter almonds, or even nitro-benzine, but very fair qualities are made at Fougerolles and in Brittany.

Some sorts are rather hot, but for "cleansing the palate" Kirschwasser, if genuine, is more suitable and more agreeable than *Maraschino*, which is also made from cherries. It improves with age.

Kirsebœr Liqueur. — Danish for the celebrated *Cherry Brandy* manufactured by Peter F. Heering, Copenhagen, established 1818. Purveyor by special appointments to the Imperial Russian and Royal Danish Courts, and to H.R.H. the Prince of Wales.

Sold by the leading wine merchants. Original cases of 12 bottles or 24 half bottles.

Kissmisses.—A variety of small grapes grown in Persia, from which the *Shiraz Wine* is made. Large quantities also are dried and sent to India.

Kitchen Fee. — A cheap cooking fat of hard and waxy appearance, made of the fat and grease from the kitchen, with 20 to 30 per cent. of cottonseed oil added in order to soften it and make it spoon or cut like butter or lard. It is cheaper than dripping, and largely used by the lower classes in large towns.

Kittool Sugar.—See *Palm Sugars, Toddy*, etc.

Knife Polish.—A powder for cleaning table-knives, fire-irons, and all kinds of bright steel goods.

A good one may be made by grinding furnace clinkers or slag to a fine powder, but a small disintegrating machine will be almost indispensable.

Knots.—A sort of crystallised fruit. The fruits are cut into long strips and then, while pliable, tied into the shape of knots. They are afterwards crystallised in ordinary way. Knots are made in different colours, and are sold either separate or assorted. Used chiefly for decorating cakes, etc., but also esteemed as a dessert fruit.

Kohl.— The German name for cabbage.

Kohl-Rabi (said to be a corruption of *caulorapa*).—A singular variety of cabbage (*Brassica caulo-rapa*), in which the base of the stem is enlarged into a green turnip-like mass, bearing the sheathing bases of the leaves. The plant is now considered by De Candolle to be a variety of *B. Campestris*. Both sheep and cattle are very fond of it.

Koker Nuts.—See *Coker Nuts*.

Kokwyn. —An African wine resembling Malaga. Made in Cape Colony from muscat grapes.

Kokum Butter.—A substance obtained from the seeds of *Garcinia indica*. It mainly consists of stearin, and is often used to adulterate *Ghee*.

Kola, Kolla, or **Colah Nuts.**—F. *Noix de Kola*; G. *Kolanüsse*; It. *Noci de Kola*; Sp. *Nueces de Kola*.

Also known in the Western Soudan as *Guru* or *Gourou Nuts* and in Congo as *Makasso*. These are the brown bitter seeds of a native West African tree, which resembles a chestnut tree, and grows 30 to 60 feet high, and is identified as *Cola* or *Sterculia acuminata*.

The pods grow in clusters of 10 or 12 together, each pod 4 to 6 inches long, containing 5 to 15 nuts or seeds, somewhat resembling chestnuts, of both red and white colours. The nuts are collected by females, then shelled and examined with great care, and some are reduced to powder before export.

The great centres in Africa of the kola nut trade are in Goree and Gambia. The tree grows freely everywhere in the tropics, thrives wherever planted, but prefers low moist lands near sea level. It yields its first crop at five years and is in full bearing in ten years, yielding some 120lbs. seed annually. The flowering is continuous. In Western Africa the nuts for transplanting are each packed within wet leaves. The Germans are growing large quantities in Togoland.

Fresh kolas are greatly fancied by the natives for their bitter flavour and tonic properties. They are also commonly used in a powdered state to purify stagnant water that has become muddy and putrid. In the Soudan the natives chew the nut, suck the juice, and spit out the fibrous matter. It enables them temporarily to withstand the pangs of hunger, thirst, fatigue, sleep, and other exhaustion. Mr. C. F. Scott Elliott, in his report on the botany of Sierra Leone, says half a kola nut will enable a man to go without food and do hard work for 24 hours or more. It is also said to counteract quickly the effects of intoxication.

Stanley, in several of his works on Africa, mentions kola as possessing

much greater sustaining power than either tea, coffee, or cocoa; the natives, he says, carry the beans in their pockets, and eat them during long marches.

The leaves also are reputed to possess similar qualities, and these are used both fresh and reduced to powder. Powdered kola certainly has a very disagreeable earthy flavour, but to cover this it is generally mixed with cocoa, coffee, or wine, although the earthy flavour may to some extent be dissipated by boiling for five minutes.

During the last twenty years the kola plant has attracted considerable attention in Europe, and in view of its probably becoming an important article a number of plants were propagated at Kew in 1880 and distributed to Calcutta, Ceylon, Demerara, Dominica, Sydney, Mauritius, Zanzibar, Java, Singapore, and Toronto, so that at the present time the nuts are produced in other countries than Western Africa. Jamaica supplies a considerable quantity.

Unfortunately, the supposed virtues both of the nut and the leaves are, in a great measure, lost in drying for exportation, so that their value in this country is very doubtful, and medical men are now averse to their use except in drugs.

The virtues of tea, coffee, cocoa, tobacco, and some other products are enhanced by drying or roasting, but this is very uncertain as regards kola. However, the prices charged for kola preparations in England are exorbitant, and altogether beyond their value as food adjuncts.

Some of the dry and rotten-looking nuts and leaves which are put on the market are quite worthless, and impart no value to the foods or beverages made up with them.

On the Liverpool and London produce markets the nuts themselves sell at 2d. to 5d. per lb. Spurious kola nuts have been met with in the English markets, particularly "Mora Nuts," often 7 to 8 inches long and 3 broad, one seed nearly filling the pod, and the seeds of *Dimorphanda mora*, a leguminous tree of British Guiana and a division of Cæsalpiniœ; but these false kolas are only used in the West Indies for feeding cattle, and have really nothing to do with the kola, neither do they contain caffeine.

Kola Cafe or Kolatina.— An extract of *kola-nut*, coffee, and chicory. It may also be prepared as follows:— Take one teaspoonful of kola powder for each cupful of water used, mix the powder evenly with a little cold water, and then add the remainder of the water, hot or cold. Boil this for five or six minutes in an open pan, and finally pour into a jug or pot, allow it to settle for a few minutes, and use as required. The addition of a little fresh roasted coffee gives it a suitable flavour.

Kola Tea. — An African beverage prepared by infusing the fruit or seeds of the kola tree. An analysis made by Professor Attfield shows it to bear a close resemblance in composition to ordinary tea and coffee, except in containing much starchy matter.

The following fluid extract has been recommended:—2 drs. of the fluid extract of kola, with a half drachm of sal volatile, and flavoured with saccharine elixir.

It undoubtedly wards off the pangs of hunger, enables a person to walk a long time without food, and increases the power of resisting fatigue from any prolonged labour, but the after effects are bad.

"Komo" Black Enamel, for grates, etc.—A quick-drying enamel, for imparting a rich and lasting glossy black surface to stoves, fire-irons, grates, and any kind of wood or iron-work, bicycles, etc.

It is much superior to Brunswick or Japan black, and is sold in 2d., 4d., and 6d. tins (self-opening).

Sole Manufacturers.—Paton, Calvert, & Co., Leeds Street, Liverpool.

Korarima (also spelt *Kurarima*).— The fruit of the *Amomum augusti-*

folium, a larger variety of Abyssinian cardamum. It seems to have the flavour of both the ordinary cardamum and the caraway.

Kosher or **Cosher Food.**— This is the marked food or meat of any kind which has been killed or prepared by the Jews after their own manner, according to the Talmudic ordinances as to the knife to be used, its shape, etc., and for the consumption of the members of that community.

In the Talmud "Kosher" means pure, clean, lawful; and *Trep*, *Trifa*, or *Traifeh*, unlawful or unclean.

People are often puzzled at seeing small parcels containing a few pounds of fresh meat going by passenger train to small seaside stations "to be left till called for," considering that at the meanest resort there is always a shop where good meat can be obtained, and, if somewhat dear, it would still be less than the cost in town, plus carriage charges. The explanation, however, is very simple. The parcels are from Jewish butchers, there being no local butcher of that faith. The very orthodox take with them saucepans, plates, dishes, etc., and so obtain the meats in the only way by which both letter and spirit of their law can be obeyed.

Koskossoo or **Couscoussou.**— A dry food of coarse meal, or semolina, prepared from sorghum and various cereals, and mixed with fish, flesh, or fowl.

It seems to form the national dish of the Arabs in North Africa, Senegal, Gambia, Guinea, etc., who invariably offer it to important guests. It was a great treat to partake of "Couscous" at the "Arabian Village" in the Paris Exhibition (1889).

In times of famine the tubers of *Arum arisarum*, called "*irene*" in Morocco, are dug up, washed, sun-dried, and ground between handmill-stones; the meal is then cooked by steam, like Koskossoo.

Koumiss (sometimes spelt *Kumiss*, *Kumyss*, etc.).—There are three or four kinds of Koumiss, made by the Tartars, Kalmucks, and other tribes of Northern Asia.

1. The chief is a vinous and intoxicating liquor consisting of mare's milk beaten up and fermented, nearly like clear butter milk. It is very sour, but free from grease.

2. A strong spirit which is distilled from the above by the Kirghis and other nomads. This sort is also called *Rack*, or *Racky*. About 6 ozs. are distilled from 20lbs. of milk, but the flavour is not pleasant.

3. Other kinds of Koumiss are made from the milk of camels, asses, cows, etc., and all are considered good for sufferers from consumption.

The real Koumiss from mare's milk is a really valuable remedy, and this kind of caseine seems to lie on the irritable stomach when nothing else will.

Ten parts of the fresh warm milk, with a little sugar, are added to one part of sour milk, and the whole is allowed to rest for two or three hours, with repeated stirrings.

The chemical results are a partial decomposition of the sugar into lactic acid, the development of carbon dioxide and alcohol, and the partial changing of the albuminoids into peptones.

It is very difficult to prepare properly, and is extremely liable to vary, either from the yeast often employed in fermenting it, or from the temperature. Doctors say it is best when about six days old. Special hospitals have lately been opened in Russia for treating consumption cases exclusively with Koumiss.

An artificial dry sort is made from ordinary milk, cocoa-butter, bi-carbonate of soda, citric acid, etc., in the form of tablets, from which, by solution in water, an effervescent Koumiss beverage is produced.

Leban in Arabia, and *Yaoust* in Turkey, are similar fermented drinks made from milk. *Galazyne* is an imitation Koumiss prepared from cow's milk.

Kovno Honey.—A celebrated kind of honey produced in the great *linden* or lime-tree forests near Kovno, in

Lithuania. It is much valued for its medicinal properties, and for making liqueurs.

Kumerah or **Kumari.**—See *Sweet Potatoes.*

Kummel or **Doppel Cummel.**—A sweet cordial or liqueur, chiefly made at Riga and in the Baltic Provinces of Russia, by distilling cummin, fennel, and caraway seeds in spirit—the strong flavour of caraway overpowering the others. It is the favourite liqueur of Russia, and very popular in Germany, also in Java and throughout the Eastern Archipelago. It has a pleasant, stimulating taste. The best quality is known as *Allasch*, and made at Weissenstein, in Esthonia, and is of the kind known as "Crystallised," the crystals forming at the bottom of the bottle from excess of sugar. Another class is known as non-crystallisable. Imitations of Kummel are also made in France by all the liqueur distillers.

Inferior sorts are made, both at Riga and elsewhere, with weakened spirits (usually brandy), and flavoured with coriander, caraways, etc.

Kumquats.—See *Cumquats.*

Kuromoji Perfume.—A new essential oil, obtained from the young shoots and leaves of the plant *Lindera sericea*, a Laurineous shrub growing 4 to 6 feet high in the mountainous districts of Japan.

The wood of the tree is much used for making toothpicks, and the oil, which has a pleasant, aromatic, balsamic odour, is becoming very popular in perfumery, especially for soap-making.

This oil is not produced on a large scale by any extensive distillers, but by small farmers in Japan, each of whom distils the yield from his own shrubs. These small stocks are then bought up by dealers in various centres and mixed together, hence it is rather difficult to find two parcels of the oil alike in odour.

L

Labels, Plain or **Coloured.**—Many articles are more or less sold by the label attached to the box, package, or bottle in which they are presented to the public eye. John E. Southall, Colour Printer, Dock Street, Newport, Mon., has had many years' experience in the preparation of commercial labels and wrappers, and issues specimen sheets (coloured), containing some of the patterns he is prepared to execute. Don't put up with an inferior article for the sake of saving a few shillings and perhaps losing pounds, but write to J. E. Southall, as above. Cost of sketches allowed on order being given. Labels suitable for grocers, confectioners, bottlers, drysalters, chemists, etc.

Labels and Paste.—See *Paste.*

Labrador Tea.—A common name given to the narcotic leaves of the *Ledum palustre*, a kind of Erica which are collected in North America, and used in brewing or rectifying ales and spirits.

Lac.—The lacs commonly sold are known as *Button Lac*, *Gum Lac*, *Lac Dye*, *Lump Lac*, *Seed Lac*, *Shellac*, *Short Lac*, *Stick Lac*, *White Shellac*, *French Varnish*, etc.

The lacs are produced in Asia by the insects *Tachardia lacca;* but in the South-Western States of America by the congeneric species *Tachardia larreæ* (Comstock).

Shellac, used largely in hat manufacture, also in preparing varnish, etc., is the purified resin obtained from *gum lac*, a resinous exudation caused by the puncture of an insect, the female *Coccus lacca*, which thus deposits its eggs upon the branches of certain kinds of trees in several hot countries, particularly in the jungles of Central and North-Western India, known as *bibar trees*, *pepel trees*, etc.

Twice a year (in March and October) the resinous substance forms as a crust, often half an inch thick, upon the twigs, and these, cut into lengths of two or three inches, are called *stick lac*. *Lump*

lac is the same thing formed into cakes.

The *stick lac* is carefully watched on the tree, and at the exact period when it is clearest and freest from colour it is gathered, then broken into small pieces about the size of rice, winnowed to free it from seeds, pieces of bark, etc., and is now called *seed-lac*.

It is next freed from colouring matter by washing in water and lime; and this colouring matter, when pressed into cakes, becomes the *lac dye* of commerce; but lac dyes have recently been almost wholly superseded by coal-tar dyes.

The gum is now dried and sifted, and put into long sausage-shaped cloth bags, heated over a fire, and the gum strained at will—either in the form of *shellac*, *button-lac*, or *short lac*.

The centre of lac production in India is about Chota Nagpore, Rewah, Mirzapore, and Assam. The well-known brand "D. C." is a product of the pioneer European factory in India, originated by one David Campbell, now carried on by Kardine Skinner & Co., and is of the highest quality. The "T. N." brand is made by anybody, and is of varying quality, a committee of brokers fixing the standard every year in London.

Shellac makes the most economical and best drying varnish known. It dries on the surface of the work without sinking in, while its tenacity to the under surface is extraordinary, and at the same time it presents a special affinity for the oil varnish usually placed over it. The most valuable is that of a bright orange colour.

White Shellac—dissolved in alcohol, with sometimes a little gum sandaric added—is well known under the name of *French Varnish*.

The chief adulterants are rosin and fusel oil.

Lachryma Christi. — F. *Larme de Christ;* Port. and Sp. *Lagrima de Christo.*

The name of a highly perfumed and expensive Naples wine, produced from red or white muscat grapes grown at Mount Somma, an extinct volcano, on a slope of Mount Vesuvius.

The skin of these grapes is so thin that the juice exudes in large drops like tears, hence the name. The annual yield is only about 100 hectolitres, and the white wine is preferred, but both red and white are extensively counterfeited by other wines of inferior quality, such as the wines of Pouzzoles, Nola, Istria, etc.

Lacquer. — A varnish composed of seed lac, shellac, or other lac resin, dissolved in alcohol, and used (with a little turpentine and sometimes colouring matter) for coating and protecting from rust various articles of polished brass, iron, or tin—such as chandeliers, gas fittings, and ornamental instruments—which are required to retain their brilliancy without daily rubbing. It is applied with a brush while the metal is warm, or it will not spread evenly.

Lacquers are known as red lacquers, black lacquers, brass lacquers, etc.

The Japanese, who first learnt the art from the Chinese, now excel all others in the manufacture of their lacquer-ware, the finest being made in Tokio and Kioto, while the cheaper kinds are manufactured in the interior. The lacquer is the product of the tree *Rhus vernicifera*, which flourishes throughout the main island of Japan, the lacquer exuding from horizontal cuts made in the bark.

Lactose. — See *Sugar of Milk.*

Ladled Butter. — Ladle-packed butter is professedly genuine butter, washed and salted in different small dairies, and then collected by dealers for the butter merchants, who mix it and beat it together in ladlefuls, so as to produce a larger quantity of uniform quality.

Sometimes this is made up in a very slovenly manner. Inferior and damaged butters, bad as they can be, from Nebraska, Dakota, and other new States, found unsaleable in their original condition, are dumped into all sorts of packages, flour barrels, starch boxes, shoe boxes, soap boxes, or anything that will not leak, so as to be a nuisance, and sent to factories in Minnesota and Iowa, where they are washed, re-worked, and salted, so as to appear in merchantable

form when they are put on other markets, such as Chicago. There the best are sold as "Imitation Creamery," and the other as "Ladled goods."

Lafite or **Chateau Lafite.** — A renowned Bordeaux wine, considered one of the best of red wines.

It is produced in the Medoc district from small black grapes, which look like over-ripe black currants.

Lager Beer (literally, Store Beer). —A light and but slenderly intoxicating German product largely brewed about Berlin, Munich, Dortmund, and especially at Furth, in Bavaria. It is also now largely made in the United States on the system of the "*Pfaudler Vacuum Fermentation* (or F.F.) *Company*," of New York, and there are also a few breweries in the U.K. (Wrexham, Burton-on-Trent, etc.)

The best is made from water, barley, malt, hops, and yeast only.

It is fermented in a different way to English ale, the yeast being added to the beer after the latter has been put in cask, and the fermentation taking place slowly while stored in a cool cellar. It is rich in dextrine and carbonic acid, and, owing to the small quantity of hops used, contains less of their narcotic principles.

Light, brilliant, and sparkling beers are produced in many districts of Germany from various materials.

In East Prussia the moderate local barley is used, but in most districts only the best barley malt, though usually with the addition of raw rice or cane sugar.

All these beers are "*lager*" beers, and the leading principles underlying their preparation are: Short time of boiling both the mash and the wort, and protracted fermentation at low temperatures. It is also found advantageous to harden the mashing water with gypsum. In using maize there is great danger of producing a raw taste, unless the grain be carefully de-germed. Thin barley and a very slightly grown barley are also used; these raw grains being conveniently added in the mash copper.

Bavarian Beer.—The superiority of this beer is attributed to the Bavarian waters with which it is brewed.

Almost every one in Bavaria is a good judge of beer, and the brewer who used poor materials would soon lose his business. The laws also are very stringent against adulteration. Hence only pure malt, superior hops, yeast, and water are used in Munich; but in Wurtemburg the German gets more for his money, rice, maize, maize meal, caramel, chicory, syrups, starch, sugar malt, and raw sugar being largely used.

Brewing Systems.—For simplicity in operation, smooth working, easy control, and perfect cleanliness, no other process can be compared to the Pfaudler vacuum, or F.F. system. By this system the principal and secondary fermentations are combined and completed in one operation, and the beer comes direct from the machine, matured, perfected, aged, and ready for the market.

There are many notable features in the system. Not the least important of these is the collection and storage of the gas made during fermentation, which may be used again as a natural agent for recharging the beer. Another thing worthy of note is that the wort is cooled only to 7½ Reaumur, and the whole process from the beginning of fermentation to the completion of the brew is carried on in closed vessels. The fermentation vats or tanks, of which there are forty, each of 90 barrel capacity—are glass enamelled internally, and can always with the greatest ease be kept spotlessly clean. Once the liquor enters these tanks no hand ever touches it till the process is complete; even the atmosphere does not come in contact with it; only sterilised air under absolute control is allowed to enter during fermentation, which fact, owing to the vacuum and the continuous removal of carbonic acid gas as it is generated, causes an incessant and, of course, beneficial rousing of the beer. The fermentation is finished in about seven days under the Pfaudler system, while on the old lines it used to take three months. Even when vacuum beer is finished on

chips, and is chip casked the same as other beer, the average time from kettle to market is only 21 or 23 days. Another important feature is the arrangement by which only filtered air is used, and the fermentation rooms kept cool and at an uniform temperature all the year round.

Munich stands at the head of the Bavarian beer production, export and consumption. The brewers there produce about 100 million gallons a year, and only obtain 2·1 hectolitres of brown beer from each hectolitre of malt; the consumption of beer in that city is about 130 gallons per head per annum, while in London it is only about 56, Berlin 52, Vienna 65, Paris 3.

White beer is also brewed 2 to 3 million gallons a year; but it is only drunk by the lower classes, Memmingen being its chief centre of production.

The imported lager beers sold in England often contain more or less of salicylic acid, which is added to help to keep the beer longer, but the use of this acid in articles of food or drink is prohibited in France and Germany as injurious to the human system.

Being a very fine and delicate beer, lager is considerably spoilt by travel, changes of temperature, Customs sampling, etc., and is at its best when consumed fresh drawn in the vicinity of the brewery in an almost freezing state.

In Germany carbonic acid gas is used for raising the beer from the cellars to the taps. It seems that the gas exerts pressure on the top of the beer, and forces it upwards through a syphon. Thus the beer does not come in contact with the air at all, and as its own carbonic gas is preserved it is drawn in a fresh condition, and never becomes flat or stale. It is reckoned that over 200,000 German restaurants use compressed carbonic acid gas for this purpose.

Laichees or Le Pilsener Lagers are a light coloured class brewed from the Bohemian hops of Austria, while Bavarian lagers are made from the darker growths of Bavaria.

They rarely contain over 2 per cent. of alcohol, and are scarcely bitter, but have a fine aroma and a special flavour derived from the resinous substance used to caulk the casks.

The offensive taste of pitch (resulting from undue storage in export casks) and the highly objectionable *garlicky* flavour noticeable in some inferior importations, are professedly admired by some persons, but it is only by those who have a limited knowledge of what genuine Lager or Pilsener beers ought to be.

Lagrimas.—A Spanish word, signifying the richest and finest of the sweet wines of Malaga—the droppings from the grapes. (See *Lachryma Christi.*)

Lampblack.— Da. *Könrög;* Du. *Zwartzel;* F. *Noir de Fumée;* G. *Kienruss;* It. *Nero-fumo;* Sp. *Negro de Humo;* Sw. *Kinrök.*

This fine black pigment used to be made from the smoke of lamps, hence its name, but now from the soot or carbon arising from the slow burning of resin, coal tar, pitch, petroleum, tar, etc. A large quantity comes from Sweden, where it is thus reduced from the refuse of resin-making. The above materials, burnt slowly, throw off a dense black smoke, and a fine gauze or a coarse woollen cloth being fixed in the chimney, the lampblack forms a thick coating which is removed from time to time, and packed in casks for use in house paint, blacking, leather work, and other common purposes.

By heating this kind of soot to redness, in an iron furnace, finer quality results. This and another superior sort made from coal-tar are used for making oil pigments, or, along with boiled linseed oil, for making printers' ink. It is also used in Indian ink, carbonic paper, etc. In America lampblack is mostly made from the imperfect combustion of natural gas. Its quality depends on its lightness and good colour. The best lampblack is that procured from burning the wood of the pine and other resinous trees; the in-

ferior kind is the heavy black prepared from bones, and called Bone-black.

Lamps, Oils, Wicks, and Glasses.—Candles have been generally superseded by lamps, and some variety of petroleum oil is usually burnt in them, though the primitive lamp at one time in use consisted of a bowl of rancid olive oil, the wick being kept afloat by passing through a cork or some other buoyant substance. Colza oil is still used in many districts, but paraffin is by far the most popular. The quality of lamp used is very important to everyone burning oil, and no conscientious tradesman will assist in the distribution of lamps which he knows to be dangerous. Cheapness is a great temptation to poor and thoughtless people to choose faulty lamps or those badly made from inferior materials. These are always the lowest priced, but the wicks and the burners seldom fit properly, the screw does not act firmly on the nozzle, and the other fittings are soon loose or out of order. Thus they are often used until a terrible disaster occurs. The glass reservoir is often of very thin glass, and the flame is so near to the oil that the latter is apt to become quite hot and burst the reservoir. An ill-constructed burner or an ill-fitting wick is a constant source of danger by allowing oil to escape every time it is moved or upset. People need to be told that a well-made lamp is always the cheapest; not only is it by far the safest, but it gives the best light, looks well, and will last longer than many of the rubbishy sort. The oil reservoir should be of metal, and not of china, glass, or other fragile material. It should have no other opening than the one into which the burner is screwed. Every lamp also requires frequent attention in trimming the wick, and keeping it perfectly clean. All oil and charred wick should be wiped off before lighting. When new wick requires buying, the purchaser should take the burner to the shopkeeper, so as to get the correct size. The wick should be soft, and not tightly plaited, and should fill the wick-holder without having to be squeezed into it. Most people know that the wick should be well dried by the fire before soaking it in the oil, but an additional means of preventing a lamp from smoking, and of ensuring a brilliant light, is to soak the wick two or three hours in vinegar, and then dry it well before using. When first lit, the wick should be turned down a little, to be slowly raised afterwards. Wicks in carriage lamps or lanterns that are not in daily use are apt to attract moisture from the atmosphere, and should often be trimmed in this way. The proper way to extinguish an ordinary lamp is to turn the wick down until there is only a small flickering flame, and a puff of breath should then be sent *across the top* of the chimney, but *not down it*. An obliging tradesman will occasionally advise his customers on these points, also on how to prevent lamp chimneys from breaking so often. He may tell them to place the lamp chimney in a pot filled with cold water, and add a little cooking salt; allow it to boil well, then cool slowly. Chimneys become very durable by this process, which may be extended to crockery, stoneware, porcelain, china, etc. The process is simply one of annealing, and the slower the process, especially of cooling, the more effectual will be the work. If the glass chimney of a lamp be cut with a diamond on the convex side it will never crack, as the incision affords room for the expansion afforded by the heat. Another essential thing to be observed is to obtain good oil, and here is a hint in economy which the retailer may also give to his customers. Make a strong solution of either alum and water or salt and water, and if the lamp will hold a pint, use half a pint of paraffin and half a pint of one of the above solutions; it will be found that the oil will last considerably longer, with little or no smoke, and give a better light. The oil seems clarified by the presence of the other solution. The lamp is safer to use, for, in the event of any ordinary lamp being knocked over, the denser fluid runs along the wick, and will put the lamp out. The alum and water are the most effectual for

this idea; but the light produced by the use of salt and water is preferable. It is necessary to steep the wick in the paraffin before allowing it to come in contact with either of the other solutions. Of course, this is obvious, but still it is necessary to point it out to some people. This will be found to answer in any kind of lamp, either for heating or for light—and if the salt solution is used in a powerful centre draught lamp, it is surprising how much of the water is consumed. In an ordinary lamp holding, say, a pint, a quarter of a pint of oil to three-quarters of a pint of either salt and water or alum and water will use the oil and give a good light to the last drop, so that, it does not matter how short the wick may be, a little water added will bring the oil up to it. At the National Museum in Washington, U.S.A., there is a very interesting collection of lamps of all ages, from the time of the Pompeian and Roman lamps up to this day. Some of them are very curious, as, for instance, the fire-fly lamp from the West Indies, with living fire-flies. The Japanese lanterns, suspended from sticks, are of many types.

Lampreys. — F. *Lamproies;* G. *Neunaugen;* Port. and Sp. *Lamprea.*

The lamprey is an eel-like cartilaginous fish, having a funnel-shaped mouth, surrounded by a circular suctorial lip, by means of which it adheres to stones, boats, timbers, etc., and to the bodies on which it feeds. There are several kinds in both fresh and salt water. They are from one to three feet long, and they are usually caught in traps or baskets.

Lampreys used to be very popular in England, both as a delicacy for pies and for potting. They are a very heavy and indigestible food, and Henry I. is said to have died through eating them too freely.

They still abound in the North Sea, the Baltic, and German rivers, and reach this country packed in jars, with vinegar, spices, and bay leaves, although not much in demand.

In Germany they are caught, fried, packed in layers, pickled with vinegar, and exported in barrels.

Lancashire Cheese. — The peculiarity and distinctive mark of Lancashire, as distinct from Cheshire and Cheddar, is that it is a softer cheese, a particularly good toaster, mellower, and very palatable when ripe.

Salting in the curd has now taken the place of brining and hand salting. The acidity is obtained by reserving each day a given quantity of curd, say one-fourth to one-third, and keeping it one to four or five days, until it becomes acid, which depends much on the temperature. One day suffices in summer, but five or six days may be necessary when the temperature is low. The milk used should never be lower than 68° F.

The variation of temperature is responsible for the differences in cheese made at the same dairy; and the development of the acidity, which should be neither too little nor too much, is the chief cause of success or failure in cheese-making.

A rich kind is made at Leigh, and others of excellent quality in the Fylde district. They are usually of white colour.

Lane's Catarrh Cure. — (See also *Patent Medicines.*)—Merely a solution of carbolic acid in water, one drachm to a pint. (*Hygiene*, 24th November, 1893.)

Langsat, Lansa, or **Lanseh.** — A very delicious Indian berry, the produce of the *Lancium domesticum.* These berries are a very popular sort of fruit in India, very juicy, agreeable, and cooling.

Lanolin or **Wool Fat.** — F. *Huile de Suint;* G. *Wollfet;* Lat. *Adeps Lanæ.*

A peculiar white and inodorous ointment composed of the yolk of wool mixed with water. It is prepared by various patented processes from *wool grease*, or the lye obtained by washing sheep's fleeces in hot water, or by the more modern method of washing wool in soapy water. Over 12,000 tons of this wool grease is recovered yearly in the Yorkshire woollen mills. Lanolin owes its chief value to its power of assimilating a large proportion of water, and is

made the medium of introducing various medicines. Wool fat in its crude state contains very valuable properties, and is applicable to the manufacturing of pomades, machine grease, etc., but has many impurities and an unpleasant odour. It was perfectly well known by the Greeks and Romans under the name of *œsypus*, a word which only disappeared from the medicine and drug lists about 1720. Since that time wool fat has passed under the names of "*Pompadour Cream*," "*Paris Ointment*," etc.

Lao Tea or **Mieng.** — A kind of tea made from the leaves of *Camellia theifera* (the Assam tea plant) by the Laos, who live in the neighbourhood of Chiengunai, Upper Siam. They do not, however, use the leaves for producing infusions, but prepare them for chewing. The leaves are first steamed, then tied up tightly in bundles, and buried in the ground for about a fortnight.

The natives call the product *Mieng*, and it is said to keep good for two years or more, and to have the same effect upon the nerves as that of drinking tea. Its use is considered to be almost indispensable by natives engaged in hard work, such as poling or rowing.

Lard.—Da. *Svineister;* Du. *Reuzel;* F. *Saindoux;* G. *Schmalz;* It. *Sugna di Porco;* Lat. *Axungia*, or *Adeps suillus;* Pol. *Sadlo Swine;* Port. *Manteiga;* Rus. *Swinoe Saloe;* Sp. *Manteca de Puerco;* Sw. *Svinister;* W. *Bloneg.*

Pure lard used to be the inner fat surrounding the kidneys and peritoneum of the pig, after being separated from the flesh and membranes by the process known as "rendering," and finally straining through flannel or a hair sieve. It is white in colour, free from taste and smell, composed of 62 parts of oleine and 38 parts of stearine, its fusing point being 81° F., and the British Pharmacopœia still directs it to be obtained solely from the omemtum or flare (the fat of the abdomen); but nowadays ordinary commercial lard is allowed to consist of the fat from all parts of the animal. *Keg Lard* is a kind which usually consists of the fat of the entire animal, and not merely that which surrounds the kidneys. Consequently, it contains more oleine, and this having a lower melting point than stearine and palmitine, makes such lard very soft.

Lard is easily prepared from fresh fats. In large factories it is done by the aid of steam, but perhaps it may be of more use here to describe how it is done on a smaller scale.

The fat should be new and fresh, and not old and rancid. It is cut up in pieces not exceeding an inch in diameter, and thrown into a boiler or pan which already contains a little melted lard; as the boiler becomes hotter the shredded fat is continuously added until the boiler is full. It requires well stirring all the time to prevent burning, and the fire should be a slow one. When all the fat is melted it is put through a *lard press*, the refuse is separated and the clear lard again gently simmered, but never allowed to boil. A little bicarbonate of soda and pearlash are mixed together in a little hot water, and then carefully stirred into the lard until well mixed and skimmed from time to time. Sometimes a little ultramarine blue in solution is stirred in with the soda and pearlash to improve the colour. Others add about a tablespoonful of saleratus to every 20lbs. of lard.

After thus refining the lard and while it still simmers, a little ground alum, say, half a pound to each cwt., is usually stirred into it very carefully or the hot lard will overflow the boiler. (This alum causes the oil to blend with the more solid constituents of the lard and to set harder.)

The liquid lard is then filled into bladders, tins, buckets, mugs, tubs, kegs, or other vessels, which are afterwards placed in cold water, where the lard quickly stiffens into a uniform marketable consistency. Care is, of course, previously taken to have the packages thoroughly clean and ready, with the tare of each marked on it before it is filled.

The bladders to be used should have been well pickled in salt, cleaned, and

washed inside and out with both hot and cold water.

By pressure at a low temperature two other valuable products are extensively obtained—*Stearine* for candle-making, and *oleine* or lard-oil for lubricating purposes.

The fat from intestines should be rendered or "tried" by itself, as it is liable to develop and impart a rancid flavour after being kept a short time. Lard is used very extensively in cookery, also in the making of some kinds of soaps, salves, ointments, etc. In Spain and Portugal it is used as a substitute for butter. The commonest adulterants of lard are cotton-seed oil and other flavourless cheap fats, salt, potato, lime, flour, and excess of carbonate of soda, but it appears that excess of water is the chief adulterant. The incorporation of two to five per cent. of milk of lime not only improves the colour, but enables the lard to absorb as much as 25 per cent. of water.

Good lard, however, should need no artificial whitening. If properly prepared and rendered, it is quite white, the presence of any colour indicating either imperfect washing or overheating.

When discoloured, it may be improved by digestion with granular animal charcoal and filtration, while warm, through a column of the same substance.

Many of the American "Refined Lard" compounds consist mainly of cotton-seed oil and a kind of oleo-stearine that is, the caul fat of cattle after the expressure of the oleo oil, the latter fluid going for margarine making.

This stearine is easily distinguished by the aid of the microscope.

Neutral Lard.—This is a name given to the more objectionable but lower priced lard compounds, often made from "dead hog grease," *i.e.*, from animals which have died of disease, or been found smothered, or died on the way to the slaughtering houses.

It is not necessary to add anything to British lard to stiffen it, but American pigs being fed chiefly on Indian corn, the fat is very soft and oily, and one may often notice a separation of drops or pools of an oily fluid. This fluid is *Lard Oil* or *Lard oleine.*

The annual production of lard and lard compounds in America has been calculated to amount to not less than 5,000,000 cwts. yearly.

Its preparation is conducted in connection with the great pork curing and packing establishments at Chicago, Cincinnati, St. Louis, etc., the first-named city, "Porcopolis," however, having the honour of turning out as much as all the rest combined.

The following are the various lard products obtained in the United States:

Neutral lard, or *Kettle lard*, almost exclusively used for the manufacture of margarine.

Leaf lard, originally obtained by melting the whole flare with steam, followed by pressure. The flare is now chiefly used for the preparation of neutral lard, which really commands a higher price.

Choice Kettle-rendered lard, obtained from the flare not used up for neutral lard and from the fat from the back of the animal. It is professedly rendered in steam-jacketed open kettles, at a temperature of about 115° F.

Prime steam lard, of all the fatty parts of the animal, such fat being known in the factories as all round fat, or "hog round."

Butcher's lard, melted on an open fire.

Low Quality lard is produced from the whole abdominal viscera or "guts."

"*Off-grade lard*," a lard of lesser value, prepared from all fat.

Dead hog grease, prepared from diseased hogs; "brown grease," from the intestines; and "white grease," from the other parts.

Yellow grease, prepared from the waste of the packing warehouse.

Pig's foot grease, obtained from the glue factories.

"Prime steam lard" is raw lard, of soft, almost oily, consistence, which hardens at low temperatures. It is melted and crystallised at 10° to 15° C. The lard oil thus obtained is used for lighting purposes, and the remaining fat (lard stearine) is mixed with ordinary

steam lard, to give the mixture sufficient firmness. The whole is then put on the market as "refined" lard.

The "refining" process sometimes includes the use of a mixture of pressed tallow and vegetable oil.

Confectioners and other large consumers desiring the most body or stiffness and most good in their pastry, as well as the best value, should select raw lard as imported in tierces or firkins, instead of small packages like pails, tins, or even bladders.

Pure lard is allowed to contain a *little* salt, say, ½ oz. to the pound, but it should never contain more than 1 part of water in 300 of lard.

Lard with Cotton-seed Oil.—Heat the lard with an alcoholic solution of nitrate of silver over a water bath for 10 minutes. When cold, pure lard should, as already stated, be white, but cotton-seed oil gives a brown or black deposit. In fact, this oil reduces the silver to a metallic state, and is the only kind of oil that will do this. All lard made in winter or spring should keep sweet for 3 or 4 months, and twice as long if in bladders; but if made in hot weather, or exposed in transit, it will only keep sound about a month.

Stoneware jars are excellent receptacles for lard that is to be kept a long time, and a dry cellar or a cool room the best for storage, but a damp and mouldy cellar is to be avoided.

Waterford lard ranks highest of Irish brands, and Belfast comes next.

Flare, *Flick*, or *Leaf Lard* is considered the purest and best, and should consist of the fat immediately surrounding the kidneys. As above stated, it is harder and less fusible, the melting point ranging between 40° and 50° C., while that of the inferior quality, obtained from the fat of the entire animal is about 33° C. Leaf lard also fetches a higher price than the ordinary commercial "first quality" of wholesale quotations.

A rough ordinary test for such adulterants is to melt the lard in a test-tube, when the melted fat will be more or less opaque if any foreign substance has been added. If the lard is pure the melted fat will form a perfectly clear liquid. The simplest way to detect water is to keep the sample in a melted condition for a time, when the water gradually settles out, and if a *graduated* tube be used the percentage can be easily determined, or it may be pretty closely estimated by noticing the loss of weight on evaporation.

Considerable discredit was, however, cast on expert evidence regarding lard adulteration by the exposure of Mr. Stock's analytical errors in the memorable *Kilvert's lard* cases.

Special Firms. — Hillier's Bacon Curing Co., Ltd., Newmarket, near Stroud; Hugon & Co., Ltd.—works: Florin Street, Pendleton, Manchester; George Wall & Co., Ltd., Liverpool and Manchester (see advt., page 10); Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool.

Lard Cheese.—Same as American Imitation Cheese. (See *Filled Cheese.*)

Lard Oil or **Tri-olein.**—F. *Huile de saindoux.*

Obtained by placing lard in woollen bags between wicker-work and the cold plates of hydraulic presses, where it is left for some 18 hours under a pressure of about 10 cwts. to the square inch, in the cold. The oil or *tri-olein* is thus obtained in a pure, colourless, and limpid state and in the proportion of about 62 per cent. of the weight of the lard; but it is so grossly adulterated that it is next to impossible to obtain any in the open market. "Lard Oil" is used as a lubricant and sometimes for illuminating. A little is used in making some kinds of soaps. It is also used in France for adulterating olive oil, and in America for adulterating sperm oil.

Apply to C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Lard Soap.—A very hard and high-class variety, of brilliant whiteness, made from, say, two parts of keg lard to one part of soda. It is usually made by the "cold process," that is to say, the high degree of heat necessary in

ordinary soaps is dispensed with. It is generally made inodorous, but if scented the desired perfume is of course added while the soap is in a pasty state.

Lardine Oil.—A lubricating oil for heavy machinery. It is prepared from cotton-seed oil, thickened by exposure to the atmosphere.

Larks (Tinned). — F. *Pâté d'Alouettes.*

These so-called delicacies are mostly prepared in France, where the pretty songsters are cruelly slaughtered in thousands for depraved appetites of the idle classes. Pithiviers, near Orleans, is a great centre for this morbid industry.

Last.—Da., Du., Ger., Sw. *Last;* F. *Lest;* W. *Llwyth.*

A load, hence a certain weight or measure. It is generally estimated at 4,000lbs., but varies considerably. A *last* of codfish, white herrings, meal, or ashes is 12 barrels; a *last* of corn is 10 quarters, or 80 bushels; of gunpowder, 24 barrels; of red herrings, 20 cads; of hides, 12 dozens; of leather, 20 dickers; of pitch and tar, 14 barrels; of wool, 12 sacks; of flax or feathers, 1,700lbs.

Latakia Tobacco (pr. *Latta-kee'-ah*). —One of the most expensive tobaccos sold. Known to botanists as *Nicotiana rustica*, like the Chinese tobacco. It is grown in Northern Syria, Latakia (the ancient Laodicea) being the name of a seaport and district in the neighbourhood of Tripoli. It is a smaller growing plant than the ordinary tobacco, *Nicotiana tabacum*, also more hardy, grows quicker and ripens earlier. It is really the same plant that produces East Indian Manila and Turkey tobaccos.

The different varieties of Latakia placed on the market are the *Abou-Richa*, or *Djebeli*, which is the finest quality, and is only obtained in the high plantations of the Nocaïris, and which is much in favour in Europe as well as in Egypt.

The Djidar is a little rougher in quality, but burns well, and is much appreciated by great smokers.

The *Schick el Bent* very closely resembles the *Djebeli*, with which it is frequently mixed by dealers.

One kind of Latakia has an admired aroma which it derives from being cured in the smoke of oak-wood, and is said to be free from nicotine. The Latakia plant is also now grown in Jamaica.

Latour Wine or **Chateau Latour.** —An excellent red Bordeaux variety, one of the best grown in the Medoc district. The cropped and stunted bushes, attached to low espaliers about two feet from the ground, are generally disappointing to the traveller through this district, who expects luxuriant scenery; and the insignificant and unpromising small black grapes from which the celebrated wines are made resemble very much the large black currants in our English gardens.

Laudanum.—F. *Laudanum.*

The popular name for *Tincture of Opium*, and the usual form in which this powerful drug is used in England.

The preparations of laudanum vary very much in strength, and extreme caution should be used with them. The only opium permitted to be used by the British Pharmacopœia is that obtained from Asia Minor, and is generally known as Smyrna opium, although it does not all come from there. This kind of opium contains about 10 per cent. of morphia, and the tincture of opium, or laudanum, is simply obtained by macerating 1½ oz. of opium in a pint of proof spirit. The strength of the product should be ·754 per cent.

Laundry Blue. — (See also *Smalts* and *Ultramarine Blue.*)—Laundry blue usually consists of starch coloured with Parisian blue. Its manufacture is very simple. A paste is made of, say, 20lbs. each of potato starch and the residue from the manufacture of wheat starch (both perfectly white), 40lbs. of Parisian blue (in the form of paste), 2lbs. of indigo carmine, and 2lbs. of gum arabic (dissolved in water). Sufficient water is added, and the whole kneaded into paste, free from lumps. It is next put into wooden frames and moved into a heated room

till half dry, and then cut into pieces of equal size by a small machine, after which the pieces are completely dried. A polished finish and improved appearance is added by giving them a few turns in a revolving drum, along with a little (say, 1½ oz. to each 30lbs.) finely powdered Parisian blue.

Many are made of common qualities of ultramarine blue mixed with some inert material, such as sulphate of barium, kaolin, and carbonate of soda, the whole being made into a paste and finely ground.

A blue which matches the leading makes of square blue may be made of 40lbs. of ultramarine at about £30 a ton, 20lbs. of ultramarine at about £20 a ton, 4lbs. of carbonate of soda at £7 a ton, and 12lbs. of glucose at £9 a ton. This brings the cost of the mixture to about 15s. per cwt. The plant necessary is a pair of edge runners for grinding the material, and a hydraulic press which will make 63 squares at a time. It has to go through many operations, mixing the raw materials, burning in ovens, chipping and cleaning the raw blue, washing, grinding it in water to the necessary degree of fineness, dividing it by gravitation, drying, sifting, and packing; but the whole cost of material, manufacture, packing, paper, and boxes need not exceed 20s. per cwt.

For good blue, apply to Barringer & Co., Ltd., Rock Valley Mills, Mansfield, Notts.

Laurel Oil, Leaves, etc. — This oil is obtained from the olive-like fruit of the laurel of Apollo (*Laurus nobilis*), a most useful shrub cultivated extensively in Cyprus, and particularly in the southern range of the mountains of that island. The wood, leaves, and fruit of the plant are all valuable.

The leaves serve as a seasoning for cooked or preserved meats and fish, for which purpose they are dried and sold in the markets, also exported. They are also in veterinary surgery considered to be an excellent remedy against various cattle parasites, the parts of the animals most attacked by flies and other parasites being repeatedly washed with a decoction of the same.

The fruit resembles small olives, and when pressed yields a greenish oil as thick as butter, and exhaling a strong, pleasant odour. The oil is used in pharmacy and in perfumery, and both oil and leaves have the property of driving away insects.

Lavender Oil. — F. *Essence de Lavandelol*; W. *Olew Lafant.*

An aromatic and delightful essential oil of pale yellow colour, obtained by distilling in water the newly-opened pale lilac flowers of lavender, also from the flower stems.

LAVENDER.

Various kinds of lavender grow wild on hills and arid mountains throughout Europe, but the best is the cultivated, *Lavendula vera.* The plant is a native of Persia, the Canaries, Barbary, and the South of Europe, from the last of which it is said to have been first brought to England, where, finding a congenial soil, and being cultivated, it yields an oil or otto very far superior to that produced from its original place of growth. Large quantities of this are grown in the Aisne, and especially at Cussy-le-Château, in France. It is also grown in great perfection around Mitcham, in Surrey, and Hitchin, in Herts. The leading growers in the latter district are Quakers. Thirty-five hundred plants

can be grown on an acre of ground if the plants are set three feet apart, and four feet between the rows. An acre of plants yields about 50lbs. of otto of lavender. About 70lbs. of flowers are required to produce 1lb. of oil. The principal constituent of oil of lavender is an unsaturated fatty alcohol called *Lavendol*, in conjunction with small quantities of limonene and a sesquiterpene. The English make is decidedly the best.

The cheap greenish varieties known as "spike" lavender, or *Oil of Spike*, obtained from the flowers of *Lavendula spica* and *L. Storchas*, are sometimes sold as substitutes for the genuine, and at only about half the price, but they are considerably less fragrant, and are chiefly used in china-painting.

Some 4,000 kilos of the oil are made yearly in the South of France, but this is often adulterated with cheaper ethereal oils, such as oil of turpentine and "spike" oil, the prices varying from 1/6 for that obtained from "spike" to 6/- per lb. for that obtained from the finest flowers, according to strength and purity.

Lavender Oil, besides being largely used in perfumery, is employed in the manufacture of lakes and in the painting of porcelain. It is also occasionally used as a stimulant or tonic. Dose 2 to 6 drops.

Lavender Water.—This favourite and very useful perfume is generally made from the essential oil of lavender, rectified spirits, and rose water or ambergris. It is, however, often met with very poor and weak in quality.

Hitchin and Mitcham have for years divided honours in producing England's supply of lavender water, the surroundings and sub-soil of chalk being peculiarly favourable to the plant's growth.

A fair quality is produced by mixing 1 oz. English oil of lavender, ½ oz. essence of ambergris, 10 oz. essence of eau de Cologne, and 1 pint of rectified spirit; or, say, 2 parts of oil of lavender, 1 of essence of musk, 2 of distilled water, and 20 of rectified spirit.

Laver is the name given to two native marine plants, called by botanists *Porphyra lacinata* (Pink or Purple Laver) and *Ulva latissima* (Green Laver). Both are seaweeds, and often used as human food.

In season from October to March.

Laver is very common on the rocky coasts of Scotland and in Devonshire. It is generally soaked in two fresh waters, about an hour in each—to get rid of the salt; then stewed in a little hot water, lemon juice, butter, and spices till quite soft and mucilaginous; but sometimes stewed with leeks or onions, and served up hot with pepper or vinegar, like vegetables with meat. Besides the laver above referred to, which is of purple colour, there is the inferior *Green laver* (Ulva latissima), also used by the poor in a similar way. Laver is now commonly used in London as an aciduous sauce with roast mutton, and is also sold preserved in 1lb. tins.

Lax in Oil.—Norwegian term for salmon smoked and tinned in oil.

Layer Raisins.—See *Muscatels*.

Lazagnes or Ribbon Macaroni.—A kind of Italian paste in thin, undulating ribbon form, and made in same way and of same material as ordinary macaroni, vermicelli, nouilles, etc. It has not a large sale.

Leather Perfume.—See *Birch Tar Oil*.

Leban.—See *Koumiss*.

Lecrelet.—A very delicate and high-class sort of pastry made at Bâle (Switzerland), and which has for its base honey perfumed with citron or orange.

Leeks.—F. *Poireaux*; G. *Lauchen, Porreen*; W. *Cenin, Leeksen*.

The leek is a biennial culinary plant of the onion family, but without the globular base of a mature onion. Botanical name, *Allium porrum*.

The edible root of the leek has the tubular form of a young or spring onion, but is thicker. It is also distinguishable from the onion by its flat, open leaves and its milder flavour. The common varieties are the *Musselburgh* and the large *London Leek*, which are by far the

best; the *Scotch*, or *Flag*, which is larger and hardier; and the *Flanders*. The leeks grown in Wales and Scotland are said to be sharper than the English. Its cultivation is made a subject of great attention by gardeners in Scotland, where its large, rich, and tender stems are carefully earthed up and blanched in the same manner as celery.

To prevent the unpleasant taint of the breath after eating leeks they should be extra well boiled.

The leek is the national badge of the Welsh. St. David, the patron saint of Wales, is said to have suggested to the Britons the wearing of leeks in their caps the better to recognise friends from foes in their battles with the Saxons.

The phrase "to eat the leek" means to submit to humiliating treatment from compulsion. (See Shakespeare, *Henry V.*)

Lee's Pills. — (See also *Patent Medicines.*)—These appear to consist chiefly of aloes with a little scammony, gamboge, jalap, calomel, soap, syrup of buckthorn, and gum.

Legumes, Legumen, or **Pulse.**— G. *Gemüse.*

These are terms for pods or fruits, which consist of a two-valved single carpel, and have their seeds attached to the ventral suture, such as peas, beans, lentils, and several other species of leguminous plants.

The word *Légume* is also the botanical name for seed-pod, but the French employ it for all vegetables, carrots, onions, etc., used as human food; also for various fruits, leaves, stems, roots, fresh or preserved, with the exception of cereals.

Leicester Cheese. — Leicester cheeses proper are small and flat, and made by the "sweet" process. They are at first slightly salted, but salt continues to be added externally. They take a long time to mature.

Leisten-wein. — One of the finest wines of the South of Germany, and being invariably reserved for the Royal Bavarian cellar, it can rarely be purchased.

Leken. — A dark and very sweet liquid which exudes from cuts made in the upper part of the date tree in Asiatic Turkey. It is an excellent beverage while fresh, and in about six hours it ferments and transforms into a wine of very agreeable taste.

"Lemco." — A newly registered trade mark, composed of its initial letters, by Liebig's Extract of Meat Co. (See "*Liebig's Extract.*")

Lemons. — Da. *Limoner;* Du. *Limœnen;* F. *Citrons;* Ger. *Limonen;* It. *Limoni;* Pol. and Rus. *Limonii;* Port. *Limoes;* Sp. *Limones;* Sw. *Lemoner;* W. *Afal Melynhir.*

These valuable fruit, of which there are over thirty different varieties, usually grow on small trees, 10 to 15 feet high, the species being distinguished as *Citrus limonum.* They are native of Assyria and Persia, and were first brought by the Moors from India in the thirteenth century. They belong to the same family as the orange, lime, citron, shaddock, etc. Some varieties grow wild, but others are carefully cultivated, and although of Asiatic origin, lemons are now grown in most warm climates, especially in Sicily, Italy, Spain, Portugal, and the South of France. The best known varieties are:— the tree with sour fruit; with sweetish fruit; with very large fruit, called "Imperial" lemons; with pear-shaped fruit; with furrowed fruit; with clustered fruit; with childing fruit; with whitish fruit; with silver-striped leaves; and with double flowers.

The Imperial lemons from the Bermuda Islands are remarkably large and sweet, and their flavour is delicious, but they are not now so often met with in our markets as formerly. Large quantities of excellent lemons are now also grown in California and Florida; but lemon culture is almost exclusively confined to the Mediterranean region, the growth of that fruit in the United States, for instance, not being equal to 10 per cent. of that country's needs.

Sherbettee Nimbo is an Indian term for the sweet lemons grown around Delhi.

The island of Zante abounds in lemons of a very large size, but Sicily

produces an enormous quantity; in fact, this beautiful island is now chiefly devoted to lemon culture, these having superseded oranges. Sicily lemons are divided into two classes—the best lemons, produced from the April and May blooms, and gathered from October and November; and the bastard lemons, small and hard, and produced from the irregular blooms of February, March, June, and July, which may remain on the trees a much longer time than the true lemon, and withstand bad weather and parasites much better.

LEMONS.

The fruit is really produced all the year round, but what is called the first gathering of new fruit takes place in October, and is termed *primofiore* (choice fruit), all lemons under three inches in circumference being left for the November gathering. Experienced pickers can easily gauge the fruit with thumb and second finger. This first crop is the most valuable, and is shipped off for spring or summer use. It is gathered when quite green.

The fruit collected in November is paler in colour and firm to the touch, but quite equal in quality, and is chiefly exported to the United States and Russia. No small or damaged fruit (culls) must be left on the tree this time, so it is collected, cut up, and packed in brine or peeled, the juice pressed out, boiled down, and sold as "agro cotto" in barrels.

It is used for the preparation of essence and juice, and is considered the best sort for these purposes, yielding about 50 per cent. more than that of other months.

One thousand lemons (trade count, 1,040) give about 16 oz. of essence and 35 litres of raw lemon juice, which (after concentration to the normal standard of 64 ounces of citric acid per imperial gallon) is reduced to 3·5 litres. It costs 1/4 to extract the essence of 1,000 lemons, and £4 to make a cask of lemon juice, including fruit, cost of cask, and labour.

Of the November fruit about seven-eighths is good for shipment, and brings the highest price, and only about one-eighth used for essence and juice. Of December fruit three-eighths is used for essence and juice, the yield of essence being less and the juice more than in November.

The November and December crops are the most abundant, and upon them speculators base all their calculations.

January fruit is more inferior, and that of February (which is the last of the season) yields only about one-fourth of fruit fit for export.

The large "Spatafora" lemons, grown around Aci Reale, between Catania and Messina, are yellow in February and March, and bring as high as 25/- per 1,000.

March and April crops are produced from August and September blossomings, and will not stand a long voyage, nor yield essence nor juice; the former, from August blossoms, are designated "biancuzzi," and are of very little value; but valuable crops may be obtained in May also from September blossomings, and the fruit keeps well to the United States.

June and July produce that known as "*verdelli*," hard, sound, and good shippers, and also the "culls" or "bastardi" lemons, which are sent to London,

Liverpool, etc.; and in August and September the crop is both smaller and inferior to the previous months.

The mountain growths bring the highest prices, but, owing to frosts, the crop is not so sure.

Over a million boxes a year are generally exported from Sicily to the United States, but, owing to the severe storms of winter, the available quantity to ship is sometimes far below that of other years, and the inventive genius of the saloon bar-tender in America is then greatly exercised to produce the multifarious drinks required by our Transatlantic cousins without the important condiment referred to. Lemons usually selling at 2 dollars a box are expected to bring 6 dollars, and possibly 8 dollars or 10 dollars. Three lines of steamers are engaged solely in taking this fruit from Palermo or Messina and Catania.

They are wrapped in thin tissue paper, to assist the ripening, and made up at Palermo into cases of 300 to 450 lemons, boxes of four or five layers, and weighing 86½lbs. per box nett. These are classed as 16, 25, 30, 36, 42, etc., according to the number of lemons in each layer.

As already indicated, two-thirds of the whole Italian crop is really grown in the old kingdom of the two Sicilies.

The large *Citron lemon*, or *Ligurian lemon*, is a large oblong fruit, with a thick, warty rind, and is admirable for candying. The smallest lemons are generally the sourest. Lemons ripened on the tree are almost valueless, for they really become too large, thick skinned, and dry, and are apt to rot soon.

The fruit is best for remote shipment when picked perfectly green and quite hard, and placed in boxes of dry sand, where it may remain four or five months to ripen before being sorted and shipped. The peel having thus become hardened, the danger of rotting is reduced to a minimum.

Lemon storing warehouses in Italy are, like all buildings in that country, of stone, with tile roofing, generally without flooring, and well ventilated. They are provided with long, narrow troughs for receiving and picking over the fruit, and with long, low tables for packing and nailing up the boxes. In some cases the growers ship their own produce, but in most cases the shippers are purchasers only.

Lemons, like oranges, keep longer and better when each fruit is wrapped in paper, so as to exclude the air, or any circulation of air around the fruit; but the boxes should be stored on end, and not be packed too closely together, nor in a close, warm room.

They reach England from Lisbon, Malaga, and Messina in large quantities from the end of September to February, in round half-chests, flat chests, boxes, and cases. After February they become rather scarcer and dearer.

About £400,000 worth now come to the United Kingdom yearly.

Lemons are the chief source of citric acid, and are probably one of the most useful fruits in our domestic economy, their cooling, refreshing, and delicious juice being especially valuable as an antidote against sea scurvy and other febrile and inflammatory diseases, also against biliousness and rheumatism.

Grocers who make the sale of green fruit a particular line of their business cannot bring too prominently before their customers the value of lemons. They are as near being a panacea for all ills as anything can be. Chronic sick headaches and biliousness will disappear if their victim will drink as soon as rising, before dressing even, a glass of warm water with the juice of half a lemon and no sugar. Lemon juice and sugar made very thick and acid will cure a cough and hoarseness. It will relieve feverishness and thirst. Lemonade, as a drink in spring and summer, will prevent or cure "that tired feeling." Hot lemonade taken soon enough will break up a cold. Chilblains rubbed with a piece of lemon sprinkled with salt will disappear. Corns will do the same if lemon juice is administered by dropping it on stale bread and binding on them. Lemons used as soap remove roughness from the hands. A lotion

of half glycerine and half lemon juice is a perfect cosmetic for taking off tan and keeping the skin white and smooth.

If the hands be stained there is nothing that will remove the stain better than a lemon or a lemon and salt.

Some people say that lemons rubbed on the roots of the hair will prevent it turning grey and falling off.

When using lemons for any purpose housekeepers would find it an economical plan to grate the yellow rind off, mix it with an equal quantity of sugar, and put it in an empty box with a tight cover. It will be found excellent for flavouring custards, cakes, and anything else where lemon extract is used. It retains the strength of the lemon while cooking, and is much more delicate to the taste than the oil or extract; or a lemon may be kept fresh and juicy for six months by simply placing it on a flat surface and inverting a glass tumbler over it.

Besides the above uses, lemons are largely employed in making lemonade, sauces, perfumes, etc. (See also *Lemon Pickles.*)

When cheap and plentiful they may be bought and kept fresh several weeks by putting them into clean tight jars or casks and covering them with cold water; keep them in a cool place, out of sunlight, changing the water every two or three days; or dry a quantity of fine sand at the fire, and when it is cold again put a layer of it on the bottom of a clean dry box. Wrap each lemon in silky tissue paper, and place them in the sand with the stalk end downwards, and near together but not touching. Cover this bed of lemons with a layer of sand about 2 inches thick, and then more layers of lemons and sand alternately. Lemons should always be handled carefully, for if bruised they will soon rot.

Lemonade. — F. *Limonade;* Port. and Sp. *Limonada;* W. *Diod afalau melynhirion.* (See also "*Temperance Drinks.*")

This was originally a beverage consisting of lemon juice mixed with water and sweetened; but aerated or carbonised water passed into a bottle containing a little syrup of lemon, or citric acid, sweetened and coloured, is now called lemonade. There is no standard.

In Nice an ounce and a half of orange-flower water is usually added to the gallon of lemonade syrup, and gives both more bouquet and a more delicate flavour to the beverage.

1. An excellent lemonade is easily prepared by taking a dozen small lemons, slicing and powdering them with half a pound of white sugar, and then throwing them into a gallon of boiling water to digest till cool.

2. Mix 4 oz. fresh lemon juice, ½ oz. lemon peel cut small, 4 oz. white sugar, with three pints boiling water; cool and strain. These two "still" lemonades are very refreshing.

3. For a concentrated quality, dissolve 15 oz. lump sugar in 8 oz. lemon juice, flavour with tincture of lemon peel. For use, mix in water with or without a little syrup or essence of ginger.

4. Aerated kinds are often made in following proportions:—One pint of water, charged with five times its volume of carbonic acid gas, and flavoured with 2 oz. syrup of lemons.

5. Boil together 1lb. of sugar and 1 quart of water, add the juice of 6 lemons, and more water when required for use.

Small percentages of sulphuric acid have been found in some makes, and occasionally traces of salicylic acid. The former is, of course, far the most injurious to the consumer.

Lemonade Powders or Crystals —These usually consist of a compound of, say, 16 ozs. bicarbonate of soda, 13 ozs. tartaric acid, 30lbs. icing sugar. The ingredients are first well dried separately, then thoroughly mixed together, and about 30 drops essence of lemon with about 5 drops of essence of pineapple added. The whole is then well mixed and passed through a fine sieve. It should be bottled and corked soon as possible, or otherwise packed in air-tight packages.

Special Firms.—Charles Cocks & Co., Reading; John May, 114 Church Street, Croydon. The latter packs them at 2/- per dozen.

Gardner's patent "Rapid" sifter and mixer, freely used for above. Prices from 50/- to £100. Catalogues from Wm. Gardner & Sons, engineers, Gloucester.

Lemonade Syrup.—The basis of this is a mixture of simple syrup 7½ pints and 2 ozs. of citric acid dissolved in 8 ozs. of water. Prepare an essence of lemon by shaking 1 oz. of the finest oil with 4 ozs. of rectified spirit. Allow to stand for a day, shaking occasionally, then separate the spirituous portion. Add 1½ ozs. of this and 1 oz. of tincture of fresh lemon peel to the gallon of syrup. Three to four ozs. of either syrup may go to a syphon. (Oxalic acid is poisonous.)

Lemon Crystals. — See *Fruit Crystals.*

Lemon Essence.—(See also *Lemon Oil.*)—Only a very small part of the essence of lemon coming into commerce is pure. It is greatly made up of 'citral," a technical term applied to the ethereal oil which is present in lemon oil. 1 oz. of citral in 15 ozs. of 95 per cent. alcohol is considered equivalent to 16 ozs. of lemon oil, and a mixture of one part of citral to 15 of lemon oil is said to be twice as strong as lemon oil itself.

Essence of lemon, or extract of lemon, from the retail grocery trade is generally put up in small bottles of ½ oz., 1 oz., or 2 ozs. each, after being specially prepared for culinary purposes.

The preparation merely consists in mixing 1 part of the oil of lemons with 10 to 20 parts of rectified spirit, adding a little light carbonate of magnesia.

After a few hours it is filtered and coloured slightly with tincture of saffron; or it may be made with spirit and lemon peel, and then filtering the product. Either kind will keep clear and bright for a long time.

Inferior flavouring essences of lemon and orange are sometimes made from the damaged and rejected fruit of the warehouses.

Apply to Charles Cocks & Co., Reading.

Lemon-Grass Oil.—An oil of dark yellow colour, is distilled from a sweet-scented East Indian grass (*Andropogon citratus*), first introduced in 1832; largely cultivated both in India and Ceylon. The plant also grows wild. Its leaves are used as a substitute for tea, and considered very good for the stomach. A perfume is also distilled from the leaves, very like to verbena, which it often represents. (See also *citronella.*)

Lemon Juice. —F. *Jus de Citron;* Ger. *Zitronensaft;* It. *Agro* or *Sugo di Limone;* Port. *Agua de Limao;* Sp. *Jugo de Limon.*

The liquor obtained by squeezing the inside pulp of the lemon (not the peel). The small inferior and windstrewn fruit is mostly used for juice making.

Sicily and the West Indies export large quantities. It has generally a slightly turbid yellowish appearance, and a fluid ounce contains from 36 to 40 grains of citric acid, a litle malic acid, sugar, vegetable albumen, and mucus. The two first render it extremely sour to the taste, but it has been found to be a most valuable anti-scorbutic, as well as cooling and grateful.

In Sicily 1,000 small lemons, weighing some 104 kilos, yield about 17 gallons of juice, and this, in its crude muddy state, is there called "*agro cotto.*"

When purified it becomes almost free from turbidity or stringiness, keeps well, has a pleasant acid taste, without bitterness. Six gallons of raw yield about 1 gallon of the concentrated juice.

It is frequently mixed with varying proportions of spirit, to make it keep better; the spirit, however, should never exceed 5 per cent.

It may also be preserved in bottle a long time by covering it with oil so as to exclude the air, and great quantities are exported from Italy and Turkey in this way.

Lemon juice is also now expressed in England, and may be preserved by agitating a prolonged time with finest powdered talcum, filtering, adding sugar, boiling, then filling hot into bottles and sealing while still hot.

Another plan is to mix 3 ozs. salicylic acid in every 40 gallons, and stir till dissolved.

All sea-going ships are compelled to take a fixed supply of lemon-juice to be served out to the men. The scurvy, formerly so fatal in ships making long voyages, is now almost unknown.

The Board of Trade standard is a density of 1·030 (when dealcoholised), and an acidity equal to 30 grains per ounce of citric acid; but the British Pharmacopœia requires a density of 1·039 and 32·5 grains of citric acid per ounce.

Lemon juice is also a very good remedy for rheumatism and the so-called biliousness of spring. In the latter case the juice should be taken before breakfast. It is also, by the addition of bicarbonate of potass, often made into lemonade. The chief adulterants in lemon juice are water, tartaric acid, sulphuric acid, etc. An artificial kind is sometimes made from 2¼ ozs. citric acid, ½ oz. gum, ¾ oz. lemon peel, 2 ozs. lump sugar, and 1 quart boiling water; macerated till cold, and then strained.

Lemon Kali (also known as *Acidulated Kali*).—A powder of tartaric and citric acid, from which to prepare a pleasant effervescing drink. The following illustrate various qualities:—

1. Mix well-dried tartaric acid and bicarbonate of soda, 1 part of each; then add 2 parts of powdered white sugar in which has been well mixed a little essence of lemon, say 30 minims to each pound of sugar.

2. 24lbs. icing sugar, 9lbs. carbonate of soda, 7lbs. tartaric acid, and 3 ozs. essence of lemon.

3. 60lbs. icing sugar, 20lbs. bicarbonate of soda, 10lbs. tartaric acid, and 6 ozs. essence of lemon.

4. 20lbs. powdered loaf sugar, 4½lbs. tartaric acid, 4lbs. carbonate of soda, and 1 oz. essence or oil of lemon.

The materials should be first well dried separately, then thoroughly mixed together, and the essence of lemon then sprinkled over it, and the whole finally passed through a fine sieve. The powder should be immediately filled into dry clean bottles, and kept as closely corked as possible.

A teaspoonful of lemon kali stirred into a glass of cold water is highly refreshing.

"Lemon kali" was originally a trade name adopted by Godfrey & Cooke for their mixture of sugar, carbonate of soda, and lemon flavouring, and this firm held a monopoly in the article for many years. The term "kali" simply means "ashes," and soda ash was called kali before the metallic element of the potash was discovered, and long before the name of kalium was given to that element.

Lemon, Oil of.— (See also *Essential Oils.*)—The essential oil of lemons is a fragrant and aromatic oil obtained from the outer rind or yellow peel of the fresh lemon, and not from the inside juice. It is easily extracted by rasping or scratching the lemon with a sort of brush made of small needles. This sets the oil free, and it may then be collected with a sponge.

In fact, this sponge process is now the one generally adopted in Sicily. The way it is got at Messina is as follows:—One man with a large knife adroitly cuts off the peel of a lemon in three slices, another man takes them and presses the outer sides against a sponge held in the left hand, bending the peel inside out so as to break the oil globules, but not the peel. This sponge is periodically squeezed over a vessel of glazed porcelain or of common

earthenware. This first yield is far from pure, containing, as it does, a small quantity of juice and of mucilage or other organic matters, which, however, slowly subsiding, form a deposit at the bottom of the vessel; the liquid next sinks, and thus the essential oil is left alone floating on the top. The workman is paid in proportion to the amount of essence he succeeds in extracting out of 35 kilograms of rinds, and a man working this way extracts about 1½lbs. of lemon a day.

It costs about 1/4 to extract the essential oil of 1,000 lemons, and a thousand fresh lemons of November gathering, and weighing 250lbs., will yield about 1lb. avoirdupois of oil, besides about 9 gallons of *lemon juice*, which latter, after concentration to its normal standard of 64 ozs. of citric acid per imperial gallon, is usually reduced to 1½ gallons.

To ensure the cells being fully charged with moisture the lemons should be previously washed in a running stream of water, or soaked for about 20 minutes.

The fruit used should be outwardly intact as well as internally healthy and sound, hence those slightly punctured, windstrewn, undersized, etc., are practically valueless.

The finest quality is obtained from the fresh fruit, but in November and December a large quantity of lemons are cut and packed in cases, and these, instead of being all exported at once, are stored in warehouses. Before shipment, however, they are often repacked, and the bad and doubtful lemons are used for cheap oil making. Such oil, of course, even "if pure," never has a fine flavour, but a smell of the wood (*di legno*) may be easily recognised. An inferior quality is also distilled from the dregs or cake remaining after extraction by the sponge process.

The percentage of *Citral* is the true test of quality and value.

Oil of lemon should contain about ½ per cent. of citral, but having a similar composition to that of turpentine, and developing much the same odour, it is very frequently adulterated with turpentine, which latter is specially purified in a peculiar way so as to have very little smell. Tons of turpentine are used in this sophistication, and it is very difficult to determine with certainty when oil of lemon is or is not adulterated with this refined turpentine, because they are both closely related terpines and both have the same specific gravity.

The sense of smell is largely depended upon. In Sicily it is tested as follows:—A sample is poured out into a tumbler and shaken up after placing the hand on the top. Great attention is then paid to the deviation and size of the bubbles and froth, the colour is noted, and one smell is taken with the glass full and another after emptying it. Turpentine will certainly be detected in this way if over 5 per cent. be present. Genuine oil of lemon is a fluid of a beautiful yellow colour, having a specific gravity of 0·8517. When distilled with water till 3-5ths of the oil has come over, it is obtained in a colourless state, and of a specific gravity of 0.847 at 72° F. It has a delicious smell of the fruit, which is greatly injured by distillation. It is soluble in all proportions in anhydrous alcohol, but only 14 parts dissolve in 100 of spirits of wine of 0·837 specific gravity.

Oil of lemon, if kept long in ill-corked bottles, generates a quantity of stear essence, which, when dissolved in alcohol, precipitated by water and evaporated, affords brilliant, colourless, transparent needles. Some acetic acid is also generated in the old oil.

According to Brande, the specific gravity of oil of lemon is 0·8786. This oil does not become concrete till cooled to 4° below 0° F. It forms with muriatic acid, especially when distilled, similar camphorated compounds with oil of turpentine, absorbing no less than 280 volumes of acid gas.

It is usually imported in copper vessels, but if allowed to remain in them for many months is liable to become con-

taminated with this metal. It is also liable to turn rancid from age if kept in a warm place.

This essential oil (often miscalled "*Essence*" of lemon) is also often adulterated with mineral colza, paraffin, resin, and even pitch. If allowed to stand any length of time in bottle a resinous sediment will often be found at the bottom.

Lemon oil is used extensively in fancy pastry, sweets, liqueurs, and summer beverages, and is not only a luxury, but very wholesome. It should be bought fresh as possible, as wanted. It always deteriorates by long keeping.

Special Firms.—Giov. Restuccia & Co., Manufacturers, Messina, Sicily.

Lemon Peel.—(See p. 171; also *Citrons*, etc.)—F. *Zeste de Citron;* Ger. *Limonenschalen*, or *Zitronenschalen*; It. *Scorze di Limone;* Port. *Corteza de Limao;* Sp. *Corteza de Limon.*

As already shown, the rind of lemons after the pulp, etc., has been removed contains a valuable essential oil, warm, aromatic, and rather bitter. The peel is often candied in its fresh state, and sometimes it is dried; in the latter state it preserves and enhances its delicious aroma.

Considerable quantities of lemon peel or "lemon skins" are imported in water, with 10 per cent. of salt, from Sicily and Calabria, but often about three-fourths of the oil or essence has been previously extracted, and it is probable that the remaining fourth is almost destroyed by the brine, so that this brined peel is very inferior, and may easily be recognised by the taste.

In Barbadoes a celebrated liqueur, known as *Eau de Barbade*, is made from lemon peel.

Lemon Pickles.—In Messina the small, inferior, also oversized growths of lemons are used for this purpose, and the process is a very simple one. The lemons are usually slit into halves or quarters and cored, put into a large vessel and immersed in salt water. They are then packed in casks with alternate layers of salt, and finally filled up with salt water, ready for shipment. Each cask contains about 3,400 lemons. In about a week the whole—both lemon and brine—is ready for filling into jars or bottles, with the addition of a little turmeric and a few capsicums, and covered with warm vinegar.

Lemon Rings.—(See also *Biscuits.*)—Ordinarily made in following form:—Take 3lbs. flour; make a bay, add 2¼lbs. sugar, ¾lb. margarine, cream them up; add five eggs, essence of lemon, ¼ pint of milk, mix and cut out with a 1½ inch cutter, finally cut out middle with a smaller cutter, and bake on tins in a sharp oven.

Lemon Squash.—The two following recipes will show the ordinary composition of this class of beverage:—

(1) Soluble essence of lemon, 1¼ oz.; citric acid, 2 ozs.; freshly boiled water, 6 ozs.; and syrup to make 40 fluid ozs. Colour, if desired, with a little saffron.

(2) Lemon juice, 40 fluid ozs.; boil and filter on to powdered sugar 30 ozs.; dissolve, with agitation, and add 1 oz. of soluble essence of lemon.

A special quality is manufactured by Charles Cocks & Co., Reading, Berks.

Lentils.—Arab. *Adis;* F. *Lentilles;* G. *Linsen;* Port. *Lentilhas;* Sp. *Lentejas;* W. *Pysmelyn.*

These are the seeds of the lentil plant, *Lens esculentum*, an annual leguminous plant very similar to that of the tare and field pea—to both of which it is, in fact, closely related. The lentil plant is, however, of a weaker and more straggling nature. It grows some 12 or 18 inches high, and has white and lilac coloured flowers, which are much sought after by the honey bee.

There are three varieties, conveniently known as the Egyptian, the French, and the German. The Egyptian lentil is a small red kind grown extensively throughout both Egypt and Arabia.

Being usually pulled like flax, not cut with the sickle, thrashed on the ground where they grow, and afterwards swept up, these are generally found to be mixed with small stones

and other gritty substances. These Egyptian varieties, although a shade darker, closely resemble very small split peas.

In France, Algeria, and Germany the greenish brown sorts are mostly cultivated, and these, although larger and coarser in appearance, are considered the best and finest flavoured, also being properly harvested before they are quite ripe, and thrashed in barns, also sifted into uniform sizes, they are much cleaner than Egyptian.

LENTIL PLANT.

Another red variety (*Lentille à la Reine*) is a larger, stronger, and coarser seed, cultivated mostly in Provence, and fed to cattle; but the small greenish lentils with brown spots, grown about Auvergne and Puy in volcanic soil, are highly esteemed, and possess the most exquisite flavour.

Large quantities are now grown in South America, particularly in Chili. The Chili growths are very like the French or Alsacian, but not graded so uniformly.

Lentils are a very ancient food, and very popular with the Greeks and Egyptians.

The name is from "Lentus" (slow), and the Romans objected to their use, because they were thought to breed indolency. On the other hand, Pliny recommended them as producing mildness and moderation of temper. They are mentioned in Genesis.

The "red pottage" for which Esau sold his birthright is said to have been made from the red variety.

Lentils, whole, split, or reduced to flour, are stated to be exceedingly nutritious, and richer in nitrogen than any other kind of grain, although much of the natural flavour is lost by decorticating, splitting, or grinding them. Ordinary qualities contain 5·9 per cent. of legumin, and the general percentage of their composition is: Water 12·51, nitrogenous substances 24·81, fat 1·85, carbo-hydrates 54·78, woody fibre 3·58, and ash 2·47.

If mixed with peas in soup they correct the tendency to flatulence; but they may be more freely eaten along with boiled rice, bacon, etc.

They require soaking in water six or twelve hours to soften before cooking.

The leafy stems are used for cattle, but the yield per acre in hay is only about a third of that of tares.

The English climate is supposed to be too moist for lentil growing, but large quantities are imported. In 1890 England imported about 24,000 quarters of Egyptian from Alexandria alone.

Lentil Powders or **Lentil Flour** generally consist of the dressed flour either of one kind of lentils only, or of two or three kinds mixed together. In some preparations barley flour is added. Nevill's seems to be composed of one part of currie powder, with about 64 parts of lentil flour.

The following recipes represent excellent powders:—

1. 20 parts of Arabian lentil flour, mixed with 4 parts of barley flour, and 1 part of salt.

2. 8 parts of pea flour, 8 parts of corn flour, and 1 part of salt.

Leppett or **Letpet Tea.** — See page 153.

Lessives.—French term for washing powders. There are various makes, but

the one best known in this country is the "Lessive Phenix" of Messrs. Redard Brothers. It seems to be a mixture of carbonate and silicate of soda with soap and perhaps small quantities of other bodies, and its manufacture is of some importance. It is intended to replace soda potash or ashes, and even soap, if the manufacturers are to be believed. It is claimed that it is cheaper than soap and quicker to use, and that it does not damage the linen. Numerous certificates attest the value of this product, and, according to researches formerly made by M. Lelong at the Central School of Arts and Manufactures at Paris, fabrics washed with "Lessive Phenix" were stronger than those washed with soda salt. It is necessary, however, to be careful to attend strictly to the directions given, as the methods of use vary somewhat for different tissues. All the lessives do not possess exactly the same composition, and there are some of them in which the silicate of soda is replaced by other products. In no case ought they to contain any caustic soda.

Lettuce.—F. *Laitue;* G. *Lattich;* Port. *Alface;* Sp. *Lechuga;* W. *Gwylath.*

A common genus of edible plants known botanically as *Lactuca sativa.*

There are several kinds, but they are usually divided into two classes, one of which is called *Cos,* or London lettuce. This does not grow in heads, but has leaves more oblong and upright, which are generally tied round to hold them close for blanching. The other class, called cabbage lettuce, has rounder leaves, which spread out near the ground, and then roll up into heads like a cabbage. Lettuce is generally eaten in the earlier stages of its growth, and is considered an excellent diluent of animal food. It is not very nutritive, but is cooling, easily digested, and slightly laxative. It is said to have valuable narcotic virtues, and a lettuce supper is averred to be very conducive to comfortable repose.

After it flowers a bitter taste develops, and a poisonous alkaloid *hyoscyamine,* which has occasionally led to serious and even fatal results when the consumption has been immoderate.

The plant, a hardy annual, is not found wild anywhere, but is extensively cultivated in Europe as a popular esculent, and especially for salads. Mildew often attacks the leaves; it first begins with pale patches and soon causes putrefaction.

Leverets.—See *Hares.*

Leverpostei, or Liver-pate.—A paste prepared in Norway from calf's liver.

Lexias Raisins.—(See also *Raisins.*)—These raisins, known in Spain as "*Pasas de Legia,*" are produced mostly in Valencia and Malaga, and derive their name from a hot liquor or lye in which the bunches are dipped after being cut and dried, and which greatly assists their final dessication. This lye is composed of water, ashes, oil, and a little salt. After being dipped the fruit is again dried in the sun, or, if the weather be bad, in heated chambers, but in this latter event the product is of inferior quality. After being thoroughly dried the raisins are packed in boxes for market, and are commonly used for cooking purposes.

Liberian Coffee.—A West African species, mostly grown in Mesurado, on the river St. Paul. It is a rather coarse kind, with very large black berries, and of the *Peaberry* type, but is cultivated also in Java and the Straits Settlements, as well as in Guatemala, and grows best in the tropical plains.

The plant is remarkably hardy, tree-like, robust, and prolific, and, being well adapted to low altitudes, it is proving a formidable and successful rival to the growths which heretofore have claimed almost exclusive attention. Export in 1895 600,000lbs., but

in 1896 over 3,000,000lbs. When ground and mixed with ordinary mild varieties it yields a strong and cheap, but still *genuine*, ground coffee.

Imported in bags of about 200lbs.

Libi - Dibi.—See *Divi-Divi*.

Lichens (pr. like'-ens or litch'-ens). —(See *Mosses, Seaweeds, Laver*, etc.) —These are the familiar plants, or fungi growing in thin flaccid crusts on rocks, stones, walls, tree barks, etc., but are quite distinct from true moss. Several of these lichens enter largely into commerce; such are Iceland moss, reindeer moss, and other jelly lichens, liver-wort, Orchella weeds, rock-tripe, etc.

This gelatinous substance is largely employed by brewers for fining beers.

Lichis, or Laichees.—See *Lychee Nuts*.

Licorice. — Should be *Liquorice*.

Lie Tea. — (See also *Macao Teas, Exhausted Teas*, etc.)—"So called by the Chinese," writes Dr. Hassall, "because it is a spurious article, and not tea at all. It consists of the dust of tea leaves, sometimes of foreign leaves and sand made up by means of starch or gum into little masses, which are afterwards painted and coloured so as to resemble either black or green gunpowder.

"The skill exhibited in the fabrication of this spurious article is very great, and we have met with at least a dozen varieties of it differing from each other in the size and colouring of the little masses."

A good deal of "*Lie Tea*" is, however, made and used in Hong Kong, chiefly by native shippers to the Straits Settlements and the United States.

It is mixed in the low-class Ponchong tea used by the Chinese in these places.

In Russia a preparation which has long been sold under the name of "*Rogogeski*" consists of spent tea leaves, re-rolled and mixed with a few genuine tea leaves and earth.

Liebfraumilch.—An excellent German wine grown in the vicinity of Worms. It is full-bodied, as is that of Scharlachberg, and is said to profit considerably from the quiescent state of the air afforded by the town wall.

Liebig's Extract of Meat.—(See also *Meat Extracts*, etc.)—An essence of River Plate meat, originally suggested and prepared by the late Baron Liebig, of Munich.

The first lot of 150lbs. was shipped from Monte Video in 1865, but imitations are now produced wherever cattle are cheap enough. They are made by boiling down lean meat, which involves the loss of fat, and as much of the gelatine and albumen as can be taken away, so as to render the preservation of the residuum possible.

The process is as follows:—The meat of the animal after being killed is allowed to cool for 24 hours. It is then placed in round iron rollers (armed inside with points), which, being revolved by steam, reduce the meat to a pulp. The pulp is thrown into a large vat with water, and allowed to steam for an hour, and is then passed into a reservoir (shaped like a trough, with a sieve at the bottom), whence the liquid of the meat oozes into another vat, whence the fat is drawn off. The pure gravy is then put into open vats, supplied with steam pipes and with bellows on the surface, which produce a blast and carry off the steam, thus helping the evaporation and preventing condensation.

Here it remains from six to eight hours, when it is passed into a filtering vat and drawn off in the form of extract of meat; when cool it partially hardens, and is ready for packing in tins for exportation. It is afterwards divided into small pots and tins as required for retail purposes.

Only 2¼lbs. of extract is got out of 100lbs. of solid meat. It consists of fibrine, osmazone, and the hot water extractives of flesh, including the flavouring matters and potash salts.

The uses to which the extract can be put are innumerable. It seems to have become indispensable to hospitals, doctors, nurses, soup kitchens, hotels, armies, explorers, mountaineers, athletes, and even the ordinary household. The chief demand is unquestionably in the kitchen, for enriching and flavouring soups, sauces, and made dishes.

It has special attractions for invalids, who as a rule are very fond of it. It often induces an appetite for nutritious foods when everything else is regarded with aversion.

Since Liebig first made public his discovery there have been many attempts to follow his idea, and then to give the products the name of "Liebig's Extract." In fact, much confusion has been thus occasioned, not only in the minds of the public but in the retail trade. It should, however, be remembered by all that the baron's idea was only perfected at the Liebig Company's Works, of which, indeed, he became the first director. Their product is always of excellent quality, never gritty one day or "stodgy" another, hence it is now generally preferred.

Dr. Justus von Liebig died on April 18th, 1873, but the company has been a wonderful success from the beginning, and the shares are now at about 250 per cent. premium. It has no connection whatever with any other brand, and has recently decided to place upon all its jars a special label marked LEMCO, the initials of Liebig's Extract of Meat Co., and the signature of J. v. Liebig in *blue*.

Liebig's Food.—(See also *Prepared Foods.*)—A typical food for infants and invalids, introduced some years ago as an improvement, by the addition of malt, to the ordinary ingredients. It is said to consist of malt powder, milk, baked wheaten flour, and saline matter.

Lignite (Brown or Bovey Coal).—Lignite is wood decayed in water, only much more decomposed than peat. It may be described as a medium betweeen peat and coal. Every fossil coal more recent than chalk is termed "lignite," but other formations are regarded as true coal.

Lilacs, Candied. — See *Crystallised Fruits.*

Lima Beans.—A popular kind of pulse, the *Phaseolus limensis*, or perennial kidney bean, largely cultivated in the tropics. (See *Butter Beans.*)

The largest grower in the world is Cav. Leopoldo Schiappa, of Pietra Ventura, California.

Limasool or Lamb's Wool.—An old English beverage, so called from *Lamaes abhal*, which in ancient British signifies "the day of the apple fruit," from being drunk on the apple feast in autumn. It was composed of ale and the pulp of roasted apples, with sugar and spice.

Limburger Cheese.—A kind of cheese made at Herve, near Limburg, in Belgium. It is usually eaten in a state of putrefaction.

Limburger cheese, when made in summer, should be used before January 1st; but September and October cheese will keep all winter. Keep in a cool cellar; turn the boxes over every two or three weeks. It is better to wrap in parchment paper, as the foil is apt to turn the cheese black in two or three weeks' time. If the cheese is inclined to get too soft put sticks between the boxes to keep them from heating. When exposed for sale it should be kept under a glass cover.

Lime. — F. *Chaux;* Ger. *Kalk;* It. *Calcina;* Rus. *Iswest;* Sp. *Cal;* W. *Calch.*

Found in most parts of the world. The purest is obtained from limestone, marble, and chalk. None of these are really lime, but are easily converted into it by placing them in kilns or furnaces made for the purpose, and keeping them for some time in a white heat—the process being known as the *burning of lime;* the result is a mass of oxide of lime, which on being moistened falls to powder, giving out great heat. This

caustic and destructive property has given it the name of "quick" lime.

Lime has been used for making mortar from the earliest antiquity, but its use as a manure is entirely a European practice. It is usually applied to heavy loam soil, with the result of increased fertility, its beneficial effects apparently depending on its power in dissolving the potassium silicate and liberating the potash, which latter is of great value when taken up by the roots of plants.

Lime Cream.—An inseparable preparation is made by shaking:—Almond oil, 3lbs., with Liquor Potassæ 2 fluid ounces, in a clean, dry bottle, then gradually adding in small quantities at a time, water 8 to 12 fl. ozs., according to consistence required, and shaking after each addition. Finally add fresh Essence of Lemon ½ fl. oz., and, after again shaking, it will be complete.

Lime Wash.— See *Whiting and Whitewashing*.

Lime Water.—A solution of lime. Take a piece of unslaked lime the size of a hen's egg, put it into one gallon of cold water, stir this, and let it settle for twenty-four hours, remove the scum and bottle the liquid. With milk this forms an excellent diet in febrile affections or acidity of the stomach; or agitate an ounce of pure caustic lime in a pint bottle nearly full of water, and, after the lime has subsided, decant the clear liquid. Keep in well-stoppered bottles. Dose: One tablespoonful in a teacup of new milk.

Lime water is an article extremely likely to undergo chemical changes, and every time it is exposed to the air, or the stopper removed from the bottle, carbonic acid is admitted, and the change goes on; hence, although there is nothing to be gained by selling it under the B.P. strength, chemists and others are occasionally being fined for selling deficient lime water. It should contain half a grain of lime in every fluid ounce.

Limes or **Lime-fruit.** — F. *Limes;* G. *Leimen;* Port and Sp. *Limas.*—(See also *Pickled Limes.*)—The fruit of the citrus lime tree (*Citrus Limetta*), a species closely related to the lemon and orange, of which, like apple trees, there are several varieties. Their flavour is generally better liked than that of lemons; they are more juicy, and their acidity more acrid. In fact, limes are the more keenly acid of all fruits, but somewhat flat and bitter.

The lime-fruit produced in the West Indies, Florida, and in Southern Europe is of globular shape, or roundish oval, much smaller than a lemon, has a thinner rind, and its colour when the fruit arrives at a perfect state of maturity is a fine bright yellow, with a protuberance at the tip, like a nipple, and the pulp is very bitter.

The *Limetta lime* of India is a sweet variety. *Ogeechee limes* are of Floridan growth, rather larger than the others, and are very popular in the Southern States of America, in the form of a conserve. *Bergamotte limes* are another variety cultivated in the Mediterranean region, and are often, but erroneously, called "shaddocks."

Limes are classed by several botanists as hybrids, between lemons and oranges, and the fruit is used in flavouring punch and confectionery.

The export trade in green limes is very small, and confined to the English market. Such fruit is picked, wrapped in papers, packed, and shipped in crates like lemons, but does not keep so well. Sometimes the riper limes are exported in casks with brine.

The Greeks have a method of removing the pulp and core, and afterwards exporting the "shells," or hollow rinds, in casks with brine. They also often preserve the "shells" dry, and covered with a thin coating of sugar.

In Montserrat, Dominica, and other of the Leeward Islands the trees are raised from seed in nurseries, and transplanted when 10 or 18 inches high to the orchard, where they are planted in rows about 15 feet apart, or 150 to 200 to an acre, light, rich sandy loam being best suited to their growth. The flowers are small, white, and very fragrant. The trees bear fruit in three or four years after transplanting, and

continue bearing for about twenty years, but they are very easily damaged by frost. An average yield is 70 barrels of fruit per acre while in full bearing.

A barrel of fruit yields 6 to 8 gallons of juice, and a gallon of this will produce 12 to 15 oz. of citric acid.

A considerable quantity of limes are raised in Dominica. The lovely Roseau Valley in that island produces the best limes in the world, the luxuriant growth being attributed to the rich volcanic nature of the soil. The trees attain the size of apple or pear trees, and produce more limes to the acre than anywhere else in the world, but the orchards are smaller.

Antigua and St. Christopher only produce enough for home consumption, but in Montserrat the lime industry is very extensive, and carried on in a more systematic manner than in any other island of that group.

The fruit begins to ripen in June, when the harvest commences, and reaches its height in August.

Although lime-fruit orchards were first planted in Montserrat in 1852, limes were almost unknown fruits outside the fashionable world until about 1890, but they have now become an ordinary commodity.

For the last few years the average annual exports from Montserrat have been—*Raw lime juice*, 800 puncheons (120 gals. each); *concentrated lime juice*, 200 casks (54 gals. each); green limes, 1,000 crates or boxes; pickled limes, 300 barrels; and essential oil of limes, 2,500lbs.

Lime-Juice.—*Raw Lime-Juice* is simply the juice in its crude state, as obtained either by grinding the freshly-picked ripe and sound limes (*Citrus limetta*) in a cone mill, or squeezing them in a simple apparatus made for the purpose, or, better still, crushing them in old sugar-cane mills suitably set with rollers. It is afterwards strained and filtered, and put into air-tight casks immediately to prevent decomposition, and is then fit for shipment. This crude juice may be purchased in bulk on the London market at about 10d. per gallon, and is purchased by bottlers of cordials and other lime-juice beverages.

As an antiscorbutic it resembles lemon juice; but its acidity is more pronounced, and it is considered a more effective purifier of the blood.

The value of lime juice entirely depends on the amount of citric acid it contains. If of good quality, 100 grains will neutralise 70 to 76 grains of pure crystallised carbonate of soda.

It always forms part in the stores for ships going long voyages, especially to Arctic regions. Before the antiscorbutic qualities of lime juice were known, sea-scurvy was the dread of mariners; but since lime or lemon juice has been adequately supplied to crews of ships sea-scurvy has almost disappeared from the navy.

Concentrated Lime Juice is produced by placing the clarified juice in a copper battery, and then boiling on a slow fire (same way as sugar), taking care not to scorch it, as that destroys the acid. It is also sometimes prepared from the juice of the inferior qualities of limes, whether ripe or partly rotten, large or small, and concentrated, as already said, by boiling the juice in open pans until reduced to one-eighth or one-tenth its volume, and a density of 60° Twaddell or 52° Beaumé. It is then a black viscid fluid, and contains 10 to 100 oz. citric acid per gallon. Most of this concentrated juice comes from Sicily in casks of 130 gallons for citric-acid making. It is there obtained as a by-product in the manufacture of essential oils from the rinds of the fruit.

Some 50,000 gallons of lime juice are imported yearly from Jamaica in casks of 30 to 50 gallons; but Montserrat has lately become the chief centre of production, and it is there carried on in a more systematic manner than in any of the Leeward Islands. There is also a considerable quantity made in Dominica.

No iron vessels should be used for lime juice, as the iron turns the acid black and spoils the flavour.

For prices, etc., apply to Kimpton

Brothers, 36 and 37 Mincing Lane, London, E.C.; Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool.

Lime-Juice Cordials.—Preparations usually made from lime juice, sugar, and water, and flavoured with lemon peel or orange flowers—say sugar (or glucose), 4 oz.; syrup, 16 oz.; crude lime juice, 16 oz.; water, 28 oz.; and coloured with a little liquid saffron. It should be well filtered till fairly clear.

Lime and lemon juices being so liable to ferment, a small quantity of salicylic acid is necessary to check the fermentation; about an ounce of the acid to 20 gallons of the cordial is sufficient.

Some say this infringes the Food and Drug Act. It is certain that lime-juice and lime-juice cordials are often falsified with lemon juice and the Merchandise Marks Act violated.

Apply to Charles Cocks & Co., Reading, Berks.

Limes. — See *Lime Fruit* and *Pickled Limes.*

Limes, Essential Oil of.—There are two kinds of essential oil of limes—the hand-made, which is the most valuable; and the oil procured by distillation. The hand-made oil commands a much higher price, because its perfume is not affected by the heat necessary in distillation. Between 2,000 and 3,000 lbs. are exported yearly from Montserrat. The common method of extracting it there consists in the use of a shallow concave metal plate, shaped like a saucer, in which are studded a number of blunt copper spikes, and from the centre of which there is a tube which serves as a handle, and the lime is gently and quickly rolled over the blunt copper spikes until the oil escapes from the rind and runs into the tube.

When the tube is full, the oil is poured into bottles, which when full are allowed to stand until the water and other impurities settle; the oil is then carefully drawn off and filtered as it is run into tinned copper vessels ready for export. Only the finest limes are used, and afterwards they are ground up for the manufacture of lime juice.

Most of the oil exported from Dominica is distilled from raw lime juice as the latter leaves the mill. Oil of limes is chiefly employed in scenting soaps, and in the manufacture of common essences and perfumes.

Lime-seed Oil. — The oil of the lime-tree seed is distinguished by a beautiful clear colour and fine taste, has not a trace of bitterness or aromatic flavour, and may be justly compared to the finest olive oil. It is surprising this oil is not more utilised. The seeds possess 58 per cent. of oil, can be pressed in all sorts of ways, and its production can thus be scarcely surpassed by any other seed. The lime-tree produces the same enormous quantity of seed almost every year, which falls to the ground in autumn, and it is very easy to collect large quantities regularly.

The oil never goes rancid, and can be left exposed in open vessels without the slightest change in taste or preservation. Being a non-drying oil, it has not the least tendency to combine with oxygen. It is therefore valuable not only as a food oil, but also for industrial purposes. It does not freeze at any degree of cold known in England, and is not changed at even 21° Centigrade.

Limerick Twist. — A kind of tobacco popular with those persons whose means will not permit them to buy better, or whose taste is not particularly acute. There is undoubtedly much good tobacco used in its manufacture, but it often covers a mass of abominations, all sorts of leaf and fag ends of the tobacco factory.

A great deal of it is now made in England and Scotland, as well as in Ireland. (See *Tobaccos.*)

Limetta Limes.—See *Lime Fruit.*

Lincolnshire Cheese.—A small soft cheese, very rich, made of new milk and cream, in pieces of 2 inches thick; will keep one to three months only.

Linden-seed Oil.—F. *Huile de Tilleul.* This is a new table oil coming into competition with olive oil. The linden-tree (*Tilia Europæa*) flourishes

throughout Europe and North America, and is often cultivated for the sake of shade. Its leaves are plain and alternate, and its flowers grow in bunches. Each flower has a corolla with 5 petals and a large number of stamens. It is a regular and prolific bearer of seed, and the percentage of oil in the seed is given at 58. It has a peculiarly fine flavour—free from all bitter and aromatic taste—and has the general appearance of olive oil. The seeds will also produce chocolate analogous to that made from cocoa nibs.

Linden-seed oil never turns rancid, has no tendency to oxygenate, and does not evaporate. It will also stand great cold, say three degrees below zero, without either freezing or even changing, and is often used in preparing tonic infusions.

Ling. — (See also *Stock Fish.*)—A valuable fish of the cod tribe, the *Lota Molva.* Besides these consumed fresh, considerable quantities are cured for export.

The name is also applied to hake when cured.

Ling Nuts. —See *Water or Trapa Nuts.*

Links. —See *Torches.*

Linseed, or **Flax Seed.** — Da. *Horfrö;* Du. *Lynzaad;* F. *Graine de Lin;* G. *Leimsaat;* It. *Linseme;* Port. *Linhaca;* Rus. *Semja Leujanoe;* Sp. *Linaza;* Sw. *Linfrö;* W. *Llinhad.*

From the Anglo-Saxon words *lin* (flax) and *sæd* (seed).

The dried, ripe, and shiny seeds of lint or flax plant (*Linum usitatissimum*), which are odourless, rich in mucilage and oil, and are considered the most valuable artificial feeding stuff for cattle.

Linseed is mostly imported into this country from abroad; 50 per cent. of it comes from India, 41 per cent. from Russia; Argentina, Holland, and Turkey send the rest. Its cultivation is, however, being largely extended in Argentina, and, as it is better cleaned and cheaper than Indian, it is being preferred by several crushers. In size and weight the seeds range as follow:—Argentine, Bombay, Turkish, Canadian, Dutch, Russian, English, the last being the smallest. Sicilian has an excess of husk.

Flax, being considered to be a great exhauster of the soil, is not much cultivated in England; but in Ireland it forms a more important crop, yet seems to be on the decline even there. From this seed we obtain several valuable products, but no starch. The bright brown Dutch seed is the most profitable for cultivation; its growth is rapid, and the crop more abundant.

Indian and Russian are generally bought for the oil mills, these being the richest in oil, although the former often contains much black, stony, and earthy matter. In Berar, a province of Central India, there are over 300,000 acres devoted to the growth of this seed, chiefly in the districts of Nagpur, Raipur, and Bilaspur. The seed is sown three weeks earlier than wheat, and does well where the soil is not deep enough for the wheat.

The *red* seed usually comes into the market mixed with rape and other seeds, which naturally lessens its value. A quarter of English linseed weighs about 424lbs., Black Sea 424lbs., Bombay 416lbs., and Calcutta 410lbs., and will yield by pressure about 120lbs. of oil and 280lbs. of oil-cake.

Special Firms.—Hedley, Gamble, & Crosfield (Cleaners), Circus Street, Liverpool; Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool.

Linseed Cake. — F. *Tourteaux de Lins.* (See also *Oil Cake* and *Cotton Seed Oil Cake.*)

Linseed cake is an oil cake, but oil cakes are not always linseed cakes.

This popular cattle food is generally made from the mass of crushed seed coats, husks, or refuse, and mucilage remaining after a portion, varying from 15 to 30 per cent., of the linseed oil has been pressed out of the seed. It is usually made up into thin flat cakes about 24 inches long, 6 to 9 inches wide, and 1 inch thick.

Its value depends mostly on the

amount of oil or fat left in, and this varies from 10 to 20 per cent., according to the amount of pressure used. This percentage is very important, because the fat is not only valuable in itself, but an aid to the animal in digesting the other ingredients. It may be roughly estimated by crushing a pound of the cake into a gallon of boiling water, and noticing whether the jelly which afterwards forms is very thick and rich, or thin and poor. It is sometimes adulterated with colza, various kinds of mustard seed, hemp seed, poppy, *ricinus arachis*, etc., but a decoction of genuine linseed, when cold, is not made blue by solution of iodine.

Linseed Meal. — This yellowish-grey powder consists of linseed reduced to powder and not deprived of its oil. There are three or four sorts in the market. The best consists simply of genuine bruised linseed. A cheap sort is made from seed after the greater part of the oil has been extracted. Another is made by grinding oil-cake.

Buyers who want the genuine should be careful to ask for "crushed linseed," the latest official name for it. Commercial samples vary much in the quantity of oil they contain. Some range as high as 50 per cent., others as low as 20 per cent. of oil. None should have less than 30 per cent.; should not yield more than 6 per cent. of ash; should be free from unpleasant or rancid odour. A decoction when cold should not become blue on the addition of solution of iodine (absence of starch); the meal should not give off a pungent odour when treated with warm water (absence of cruciferous seeds). If kept too long in stock it may easily fall short of these requirements.

Although grocers have often been fined for selling linseed adulterated with starch or meal sweepings, and should be careful what they buy, it was decided in the Queen's Bench Division, November, 1896, that linseed meal was *not* a drug. Mr. Justice O'Brien held that there were several things capable of being used as medicines which were not drugs. A drug should mean a thing the primary object of which was medicinal. Mr. Justice Johnson concurred; and Mr. Justice Gibson agreed that the essential of a drug was that it was used as a medicine, and that "where the purchaser did not indicate what he required a prosecution could not succeed." There is no starch in genuine linseed, but cellulose, and that cannot be converted into starch. Linseed meal is often used for poultices, also mixed with milk or water for calf or cattle food. Its value may be pretty closely tested in same way as linseed cake.

Special Firms.—Hedley, Gamble, & Crosfield, Circus Street, Liverpool; Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool.

Linseed Oil. — Da. *Lünolie;* Du. *Lynöli;* F. *Huile de Lin;* G. *Leinoel;* It. *Olio di Lino;* Pol. *Oley Luiany;* Port. *Olio de Linhaca;* Rus. *Lejanoe Masslo;* Sp. *Aceite de Linaza.*

A peculiar drying oil expressed from linseed, or flax-seed. The oil varies in colour from light amber to dark yellow, but when purified it is quite colourless. It has a rather sickly smell and taste. In the preparation of the oil the ripe seeds are first crushed or ground, and then subjected to hot or cold pressure. Oil expressed from unripe seed is watery and unfit for use, and the seed should always be kept three to four months before crushing, when a more abundant yield of oil may be obtained.

By far the best oil is the "cold drawn," and will not turn rancid so soon, but this cold pressure only yields 15 to 18 per cent. It is very unctuous, and unpleasant to the taste and smell, and by exposure to the air and light it becomes dry. If the seed be treated with about 200° of steam heat, 30 to 40 per cent. of oil, known as "raw" or "ordinary," may be expressed.

This "hot drawn" oil is of a yellowish red, or deep wine colour, and is more nauseous than the cold drawn. Boiled linseed oil, or "boiled oil," as it is frequently called, dries in the air much quicker than does the unboiled oil. It is usually prepared by boiling the raw

oil with either litharge, white lead, or sulphate of zinc, and is therefore preferable for mixing with paints; but there is still much to be learned with regard to the chemical processes involved in the so-called drying of linseed oil. Cotton-seed oil, though not strictly a "drying oil" of itself, will act as such when mixed with linseed oil, but not so well. Linseed oil is mostly used in preparing varnishes, paints, printer's ink, soft soap, and floorcloths, etc. Mixed with lime-water it is often usefully applied to burns and scalds.

The annual production of linseed oil in the U.K. approximates 28 million gallons. The best test of quality is the smell and taste.

The chief adulterants are cotton-seed oil, cod oil, resin oil, and linoleic acid.

Liptau Cheese.—See *Bringen*.

Liqueurs (*lik-kerrs'*). — (See also *Cordials.*)—The name liqueur is now applied to a great variety of alcoholic syrupy liquids, or cordials flavoured and perfumed with fruit essences and other aromatic substances, and sometimes artificially coloured; but on the Continent the term is confined to the *thinner* spirituous compounds; and Crêmes, for instance, which are thick and syrupy, would not be classed liqueurs. They are mostly Continental productions, and are used as appetising agents or after-dinner stimulants, but almost exclusively for the gratification of the palate.

We import from France some 7,500 gallons a year, valued at about 40/- per gallon.

The best are made by distillation, but others by infusion, the latter being the easiest and perhaps most usual way, and it is only when some objectionable flavour is present that distillation is absolutely necessary.

The concoctions made are very numerous. The lower priced qualities are often made simply by mixing alcohol, sugar, and fruit essences, the name merely indicating the perfume employed, but these cannot compare with the high-class liqueurs distilled from the fruit or grain itself with brandy. Many of them will be found more fully described under their separate headings; but the following are the best known:—

Abricotine.
Absinthe.
Acqua d'Oro.
Alkermes.
Anisette.
Antwerp Vichy.
Bénédictine.
Bitters.
Bonnekamp.
Brou de Noix.
Byrrh.
Cacao (Crême de).
Cassis.
Chartreuse.
Cherry Brandy.
China Brun.
Clove Cordial.
Conatto.
Curacao.
Dantzic Gold-water.
Eau de Melisse.
Elixir Angelo.
Elixir Combier.
Elixir de Bruxelles.
Elixirs de Spa.
Fraises.
Framboises (Crême).
Garus.
Gauloise.
Ginger Brandy.
Goudron.
Guignolet.
Hondaye.
Kirschwasser.
Kirsebœr.
Koff.
Kohinoor.
Kummel.
Liqueur Hygienique.
Maraschino.
Menthe (Crême de).
Moka (Crême de).
Monastene.
Myrobalanti (Crême de).
Noyau (Crême de).
Orange Brandy.
Peppermint.
Prunelline.
Punch.
Raspail (Name of mfrs.).
Ratafia.
Rose (Crême de).
Rosolio.
Thé (Crême de).
Thélême.
Vanille (Crême de).
Vermouth.
Vespetro.
Visitandine.

"Bitters" are also called liqueurs, so are certain sweet wines, such as *Vermouth*, *Alicante*, *Lunel*, and *Cyprus*; but true liqueurs are those solutions which have brandy or pure alcohol as their base, to which a flavouring ingredient, and sometimes colouring matter, has been added.

Four distinctive qualities are generally prepared. The first are termed *eaux*, *extraits*, *liqueurs*, in which the sugar, alcohol, and fruit, or seed extracts, are in small quantity, so that, though somewhat sweet, they are entirely devoid of viscidity; the second, known as the *baumes* or *crêmes*, are

similar aromatic infusions, but rendered very thick by sugar, say 1lb. sugar to every quart of liquid; the third quality are termed *huiles*, oils, or *superfine* liqueurs; they are more syrupy, and contain more alcohol. Ratafias are liqueurs made thick with the juices of fruit, sugar, and alcohol.

Elixirs is an old name (from the Arabic *al eksir*) for certain mysterious concoctions which were imagined to possess rare hygienic properties, and is still applied to a few specially flavoured with herbs and plants, such as the *Elixir de la Grande Chartreuse*, etc. Most of the liqueurs were originally made by religious brotherhoods and sisterhoods, or from recipes claimed by them. "Chartreuse" is still made by a deputy of that convent; many of the others owe their names either to the convent or monastery near which they are manufactured, or from which the recipes or titles were obtained.

Holland is famous for its *Curacaos*, Belgium for its *Bonnekamp*, and Russia for its *Kummel*, and almost every large district of France has its own speciality of liqueur. Bordeaux is noted for its *Anisette*, Dijon and Côte d'Or for *Cassis*, Grenoble for its *Ratafias*, Fécamp for its *Bénédictine*, Angers for its *Guignolet* and *Triple Secs*, and Marseilles for its *Absinthe* and *Vermouth*; while Paris and Lyons are each remarkable for many different kinds.

All these distillations, nevertheless, spring from the addictedness of the mediæval monks to alchemy and to researches into the possibilities of the Magnum Opus, the Quintessence, the Grand Arcanum, and the Elixir of Long Life. They made as frequent use of the still as of the crucible and the Bath of Mary. The plants which they treated in vain attempts to discover the Elixir of Immortality were arnica, camomile, rosemary, elder, rose, and iris. The Elixir of Long Life was eventually, and together with alchemy, given up as hopeless; but the monks retained their stills and their worms, and their cunning in the treatment of plants and alcohol. They took to the not very dignified, but still profitable, trade of making liqueurs for the tables of the affluent, and for some generations their recipes were kept a profound secret. Monks and nuns of many of the monastic orders have, almost ever since the introduction of alcohol from Arabia, or more probably from Moorish Spain, busied themselves in making liqueurs. The Carthusians, the Bénédictines, the Carmelites, and the Trappists have all been renowned for their special liqueurs, and there have even been individual extracts of herbs, held in solution in strongly alcoholised syrups, such as the liqueurs of Father Garaison, and that of Father Kermann. For decorum's sake it might be contended that these monastic liqueurs are either digestives, anti-apoplectics, anti-choleraics, or anti-spasmodics; nor can there be any reasonable doubt that the liqueur distilled by the monks of the Certosa, near Florence, is a tonic, and that made by the Trappists, of the Quattro Fontane, in the Roman Campagna, a compound into which the eucalyptus enters largely, is a febrifuge.

In the United States the names of liqueurs are legion, but they are mostly uncongenial to English palates. Many of them are quite elaborate concoctions, and consist of such a jumble of vegetable extracts that their production is scarcely possible, except in the medicine loft of some old Dutch "droogery."

Both liqueurs and elixirs were in their origin strictly pharmaceutical productions; and should be *sipped*, not swallowed quickly. They improve with age, and the bottles should be stored on their ends in the wine cellar, instead of being laid down horizontally like wine. Liqueurs, unfortunately, are generally retailed at prices five or six times beyond the value of their ingredients, a shilling glass containing about two thimblefuls; consequently the popularity of these confections is very much limited.

Liquid Boot Polishes, Dressings, etc.—(See also *Blacking*, *Shoemakers' Black*, and pages 147, 458, etc.)—Liquid blacking is generally made by merely

adding extra vinegar, sour beer, or similar liquid to the paste blacking. The ingredients require to be finely divided and thoroughly mixed in something like a paint mill, hence blackings are more conveniently made on a large scale. A little blue improves the appearance.

Examples of Liquid Blackings.—(1) Very finely ground animal charcoal or bone black is mixed with sperm oil till the two are thoroughly commingled. Raw sugar or treacle, mixed with a small portion of vinegar, is then added to the mass. Next, a small measure of dilute sulphuric acid is introduced, which, by converting into sulphate a large proportion of the lime contained in the animal charcoal, thickens the mixture into the required pasty consistence. When all effervescence has subsided, but while the compound is still warm, vinegar is poured in until the mass is sufficiently thinned, then it is ready to be bottled for the market.

(2) To 4 oz. of ivory black add 3 oz. of the coarsest sugar, a tablespoonful of sweet oil, also a pint of small beer, and mix them cold.

(3) Mix 5lbs. bone black, 5lbs. common black treacle, and 2½lbs. sweet oil, then add 2lbs. oil of vitriol (dilute sulphuric acid), and finally sufficient sour beer to make the lot into two and a half gallons of liquid blacking.

(4) Treacle 4 ozs., ivory black 4 ozs., rape oil 1 oz., vinegar 24 ozs., oil of vitriol 2 drachms. Mix in above order.

(5) Treacle 4 ozs., ivory black 4 ozs., rape oil ½ oz., powdered gum arabic ¼ oz., vinegar 24 ozs., oil of vitriol 1 drachm. Mix in above order.

(6) *French Blacking (Jacquard's).*—

	Parts by Weight.
Freshly calcined animal charcoal	750
Muriatic acid	250
Treacle	1,000
Prussian blue	30
Indian lake	30
Olive oil	500
	2,560

Treat the char with the acid, stir in the finely ground Prussian blue and Indian lake, then the olive oil, and finally the treacle. The olive oil may be replaced by a cheaper one. The blacking made from spent char from sugar refineries goes mouldy.

(7) *Blacking for Dress Shoes,* etc.—Take 1 oz. gum, ½ oz. lump sugar, ½ oz. ivory black, and a little water. Dissolve the gum and sugar, powder the black, and mix. Apply it to the shoes with a leather or brush; no polishing is necessary.

(8) *Polish for Dress Boots.*—

	Oz.
Gum arabic	8
Treacle	2
Ink	12
Vinegar	2
Methylated spirit	2

Add the ink and vinegar to the gum, and dissolve by the heat of a water-bath; then add the treacle and, on cooling, the spirit.

(9) *Black Dye.*—For converting tan boots, boil 4lbs. extract of logwood in 3½ gallons of water, and when dissolved add 2 ozs. bichromate of potash and 4 ozs. of nitrate of iron (persulphate of iron). Mix well, and strain.

(10) *Snow-white Dressing.*—For canvas and buckskin boots and shoes, white belts, etc. This is easily and cheaply made from 1½lbs. of white shellac, ¾lb. of borax, 1½ ozs. soft soap, 5lbs. powdered pipe-clay, and 1 oz. ultramarine. Boil the borax and shellac in the water, and when dissolved stir in the other ingredients. Mix and strain. *Squeaky boots* are easily cured by two or three applications of castor oil to the soles and uppers.

Special Firms.—Day & Martin, Ltd., London and Liverpool (see adv. near end of book); C. Windschuegl & Co., Materials for Blacking, 1 Leadenhall Street, London, E.C.

Liquid Blue. — Liquid blue for the laundry is easily made by dissolving ¾ oz. of Prussian blue and 3 drachms of oxalic acid in a wine quart of water; or mix 8¼ parts of finely-powdered indigo with 33⅓ parts of sulphuric acid in a porcelain vessel. Let it stand six

hours, stirring frequently with a wooden or glass rod, then pour into a flask containing half a gallon of lukewarm water. Throw powdered chalk into the flask until effervescence ceases, in order to remove the sulphuric acid, which would be injurious to the clothes. After allowing it to stand quietly for a few days, and then filtering, it will keep for years without spoiling.

Liquid blue may also be made by dissolving one part of indigo carmine in ten of water, and then adding half a part of gum arabic, or by dissolving 4 ozs. of aniline blue in a gallon of boiling water. A dozen drops of this liquid will suffice to colour a bucket of water.

Liquid Eggs. — (See also *Eggs.*) —These mostly come from Russia in drums containing about 1,500 eggs each, and the greater proportion consists of whites and yolks mixed. But on the Continent all exporters who know their business economise their waste (small and ruptured eggs, as well as those with broken and cracked shells) by a process, the credit of which is ascribed to a French chemist, M. A. Biez, introduced about 1885. On the Continent liquid eggs are cheap and appreciated, and sell at about 4d. a dozen in summer, and from 6d. to 7d. in winter. In preparing liquid eggs it is found in practice that 100 parts by weight of eggs consists of shells 14, white 51·6, and yolk 31·4. In spring the proportions are 160 white and 100 yolk; summer, 156 white and 100 yolk; autumn, 150 white and 100 yolk. (See p. 353.)

Apply to C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Liquid Enamel. — See *Enamel Paints.*

Liquid Extract of Meat.—See *Meat Extracts* and *Carne Liquida.*

Liquid Fuel. — This usually consists of the unrefined oils of the heavy type, or the impure remainders of oils after the removal of the lighter portion, suitable for illuminating purposes. At Balik Papan, Muafa Jawa, and Sanga Sanga, in the jungles of the Kotea district, East Borneo, a large quantity of crude fuel oil, obtained either from naturally flowing wells, or by the aid of pumps, is now being piped into tank ships for storage at various foreign ports.

Fuel oil is coming more and more into use every year, especially for steam ships. The only difficulty seems to be in the uncertainty of finding supplies at many ports, after fitting the ships with the special furnaces necessary for burning oil. It is a moot point whether it is yet more economical than coal, but there is certainly less labour in stoking, for one man can easily attend to 8 or 10 boilers. All he has to do is to turn a cock on or off. On board ship also the oil fuel requires far less bunker space than coal, thus leaving more room for cargo.

Liquid Glue. — F. *Colle forte liquide;* G. *Flüssiger leim;* It., Port., and Sp. *Colla liquida.* Several preparations were much in vogue a few years since under this title. The liquid glue of the shops is made by dissolving shellac in water, by boiling it along with borax, which possesses the peculiar property of causing the solution of the resinous lac.

This preparation is convenient from its cheapness and freedom from smell, but it gives way if exposed to long-continued damp, which that made with naphtha resists. Some kinds of liquid glue consist merely of ordinary glue liquefied by either nitric or acetic acid, and then bottled ready for use. Others are solutions of shellac in naphtha, and made like French polish. A very good, strong one, that dries quickly and well, is made by dissolving glue or gelatine in aqueous chloral hydrate solution.

Liquid Gum is usually made from glue. First make a solution of 1 part of glue in 10 of water; to this while hot add a half-part of nitric acid, and boil well. The glue becomes liquid. To this you may now add a quarter-part of boric acid previously dissolved in double its weight of glycerine; or dissolve 2¼lbs. glue in a quart of water and 7 ounces of nitric acid. The latter will keep good about two years.

Liquorice Juice.—Da. *Lackrisaft;* Du. *Drop;* F. *Jus de Reglisse;* Ger. *Lakritzensaft;* It. *Sugo di Regolizia;* Pol. *Lakrycya;* Port. *Succo de Alcacuz;* Rus. *Solodkowoi;* Sp. *Regaliz en Bollos o Pastillos;* Sw. *Lakrits.*

Also known as "*Juice*," *Spanish Juice* or *Spanish Liquorice.* In Scotland it often goes by the name of *Black Sugar.* (See also "*Pomfret Goods.*")

These hard black sticks, or rolls, five or six inches long, and the black inspissated extract (see *Liquorice Paste*) are prepared in several parts of the South of Europe, Asia Minor, and latterly in America and Mexico, but mostly in Calabria, Sicily, Spain, and France. Stick liquorice is also now being manufactured in the Taranta district of Italy from the root grown in Calabria and the Basilicata.

Liquorice juice is obtained by boiling and pressing the crushed roots of the liquorice plant (see *Liquorice Root*), then evaporating the infusion, mixing it with more or less starch, and rolling the mass into sticks of various sizes. These are left to dry in the open air. The sticks come to this country interspersed with leaves of the bay or cherry laurel in cases of about 1½ cwts. each. In Spain they are packed in oblong cases, containing 260lbs. each.

The leaves serve to protect the juice from the ravages of a species of small white worms or grubs, which bore into the adulterated sorts; but these insects will not attack pure liquorice as obtained from the root. Liquorice sticks infested with these weevils should at once be exposed in sieves or riddles to the fumes of burning sulphur, in a close chamber or other improvised vessel, when every worm is easily disposed of.

Solazzi juice, usually 1/2 to 1/4 per lb.; Corigliano, 10d. to 1/-; Grasso, 8d. to 9d.; Zaragozana, 7d. to 8d.; and Pignatelli are considered the best commercial brands.

It should have a bright shiny fracture, and be entirely soluble in water. It should not turn moist or glutinous if preserved in a dry place. It is sweet and without any flavour of burnt vegetable matter. It should melt perfectly in the mouth without taste of burning, and without leaving any harsh or gritty particles between the teeth.

A few of the best samples of liquorice in the market contain over 19 per cent. of glycyrrhizin, but anything between 10 and 20 of that constituent, and about 10 of water, with 20 to 30 of insoluble matter, is more the standard of commercial liquorice.

The chief part, however, of the imported juice is re-dissolved, and either sold as refined and doubly refined liquorice, or mixed with rice-starch, potato-starch, sago-flour, or sometimes mill-sweepings, and made into soft Pontefract lozenges or Pomfret cakes, sticks, or other fancy shapes for children.

Besides being used in confectionery, liquorice is largely employed by porter brewers, Cavendish tobacco manufacturers, etc. Partaking also of a medical character in its application and use as a soothing agent or demulcent, it should be chosen absolutely pure, but probably few articles are more heavily adulterated, and "liquorice pipe" often contains 50 to 80 per cent. of rice, chalk, gelatine, potato-flour, etc. Most of these adulterated compounds are made in France, and, as a rule, bear brands such as "Cassano 70," "Cassano 80," denoting the extent of adulteration as required by French law, viz., 70 or 80 per cent. of liquorice with 30 or 20 per cent. of adulterants.

The liquorice trade of Damascus, formerly an important industry, has to a large extent died out, owing to the discovery of a better quality of root in Northern Syria and elsewhere.

The industry was introduced into the Caucasus about 1890 by two English manufacturers, Joseph Bliss & Co. and Andrew Urquhart. The factories are at Elizavetpol, Oudjari, Kurdamir, and Liaki, whence also the raw root is imported in bales.

The best liquorice juice has a shiny black colour. It turns soft quickly in a warm atmosphere. Its fracture is

clear and bright, as already pointed out, and with water the solution is transparent. The impure juice is generally brownish. Its fracture is somewhat granular. It will not generally dissolve altogether in water, but yield a muddy liquor.

A good deal of Spanish liquorice is now exported from the port of Corio del Rio, on the Guadalquiver.

Liquorice Lozenges.—The best are made of, say, 5 parts lump sugar, 7½ parts liquorice, 2 parts powdered starch, with mucilage to fix.

Liquorice Paste, or **Liquorice Mass,** is a form of crude liquorice somewhat coarse.

The plant producing the modern chemical product, "glycerolate" of ammonia, is extensively cultivated in Turkey, the southern part of the Spanish Peninsula, in Italy and Sicily, and, to a small degree in France, Germany, Russia, Mexico, and China.

Its extraction from the root when fresh is very easy. It can be done without any special knowledge or training, and without any other machinery than a copper kettle. After the liquorice roots are cleaned and dried, they are chopped and boiled in water until the liquid is saturated. When sufficiently boiled, it is allowed to stand, so that all foreign matter may settle. The liquid is then filtered and evaporated until it gains consistency.

This sweet, starchy, and grateful juice has valuable medicinal qualities, and worth, when pure, 4/- to 5/- per lb. As an emollient and demulcent it is very useful in coughs, colds, sore throats, and other irritation of the mucous membrane, hence it is used in making cough lozenges, Pontefract cakes and pipes, and several other semi-sweetmeats. Unfortunately, these pastes are not always what they ought to be; liquorice is open to considerable adulteration, which is often palpable to the taste and militates against its more extended use. It should be bought with considerable caution.

Liquorice Powder.—A medicinal compound, largely sold in penny packets. (See B.P.) Should contain 8·33 per cent. of sublimed sulphur.

Gardner's patent "Rapid" Sifter and Mixer, freely used for above. Prices, from 50/- to £100. Catalogues from Wm. Gardner & Sons, engineers, Gloucester.

Liquorice Root. — F. *Bois de Reglisse*, or *Racine Douce;* Ger. *Suessholz;* It. *Regolizia;* Port. and Sp. *Regaliz Orozus;* W. *Perwraidd.*

This was anciently known as *Sweet-root*, and consists of the roots of a genus of perennial leguminous plants, known as *Glycyrrhiza*, of which there are seven or eight varieties.

G. glabra, the common liquorice, native of Italy, is the best known, but the juices of *G. echinata* and *G. glandulifera* are equally esteemed as pectorals. They all have a sweet, earthy, strong, and somewhat sickly taste and a peculiar flavour.

The true liquorice (*G. glabra*) grows wild around Elizavetpol and Baku, and other points in the south of Europe, but is cultivated extensively in Spain, Italy, and Asia Minor, and its roots, three or four feet long, abound with a sweet starchy juice. They have a dark brown longitudinally wrinkled and somewhat warty surface, and have a carrot-like bark which is about one-sixth the thickness of the woody cylinder. The plant also has underground sucker-like stems, several feet long, harder and tougher than the root, but containing similar properties. A considerable quantity is grown in Sicily. There two species are found, but neither is cultivated. One sends down a main root three to six feet, with but few lateral roots; the other only creeps beneath the surface at a depth of 6 to 24 inches, the latter being the most productive and the most highly prized. In Catania there are some half-dozen factories of liquorice, employing 20 to 40 hands each. In preparing the root for market, women with knives scrape off the bark and then cut it into pieces from ½ inch to length desired. These are then dried in the sun and bagged for export.

Since the time of Elizabeth liquorice root has been grown in England about Mitcham, in Surrey, and until twenty or thirty years ago around Kew and Isleworth, but now only in Yorkshire, between Pontefract and Knottingley. The deep, rich, loamy soil of the latter district has long been noted for English liquorice root. The plant usually grows four or five feet high, has few branches, but pinnated leaves with many leaflets, and blue, violet, or white pea-like flowers. In some districts the plants multiply spontaneously, but where cultivated the plant is propagated by slips off the root-stock, and requires a deep, rich, loose soil. They are as tenacious of life as horse-radish, and as difficult to eradicate. After three years' growth and during the cold season when the leaves of the plant turn yellow (this being an indication that the sap has descended) the whole roots are taken up and found to contain the very valuable and grateful juice called *Glycyrrhizine*, a yellow transparent kind of sugar, uncrystallisable, but perfectly soluble. At the above age the root is at its best, but much of the thick root imported is of 10 to 20 years' growth, and contains comparatively very little sap.

This dried imported root is somewhat darker in colour than the fresh, is furrowed longitudinally, and has a slightly acrid or bitter taste, but when peeled it has a yellow colour externally and there is no acridity. When cut up into suitable pieces the dried root forms an excellent masticatory.

The British Consul at Batoum says the cultivation of liquorice in the Caucasus is becoming very important. In 1897 the export from Batoum being 4,423 tons, rose in 1898 to no less than 9,760 tons. In a district lying between Elizavetpol and Hadji Cabul, where labour is but 8d. to 1/2 a day, the green root is only about 25/- a ton. J. Bliss & Co. and A. Urquhart & Co. there prepare about 10,000 tons a year. This mostly goes to America, and the production is rapidly increasing.

Large quantities are also grown in Persia along the Burujird and Khoremabad plains between Teheran, Karun, and Mohamrah, and it is found in some abundance in Turkey, near Korna, at the junction of the Euphrates and the Tigris, whence it is sent in bales to Marseilles *viâ* Busrah or Baora.

There is an increasing demand for liquorice root in the manufacture of "chewing tobacco," especially in America.

Litchis, or Letchis.—See *Lychees*.

Litharge.—Da. *Glod*; Du. *Gelit*; F. *Litharge*; G. *Bleiglaette*; It. *Litargirio*; Pol. *Gleyte*; Port. *Almartaga*; Rus. *Glet*; Sp. *Litargirio*; W. *Plwm Gwydroledig*.

The litharge of commerce is semi-vitrified monoxide, or sub-carbonate of lead, and is obtained chiefly by scraping off the drops that form on the surface of melted lead exposed to a current of air (dross of lead), and heating it to a full red, so as to melt out any undecomposed metal. This fused oxide in cooling forms a yellow or brownish semi-crystalline mass, which readily separates into scales and these when ground constitute *powdered litharge*. The yellow variety is obtained when the metal is only moderately heated, and is usually called "massicot."

Litharge is also prepared by exposing *red lead* to a heat sufficient to fuse it. *English litharge* is obtained as a by-product by liquefaction from argentiferous lead ore. Litharge is more or less white, according to the metals with which the silver was alloyed.

The white is called *litharge of silver*, or silver stone, and the red is often improperly called *litharge of gold*.

Lithia Water (pr. *lith'-yea*).—An effervescent mineral water, or medicine, consisting of a solution of the freshly precipitated carbonate of lithia in the proportion of 5 grains to the half pint of aerated water.

Carbonate of lithia appears to be the only salt of this alkali which is of any commercial importance. Considered a useful remedy for gout and other calculous complaints.

Litmus. — See *Orchella Weed*.

Livarot Cheese. — A popular French make, soft, and of fine flavour, produced to the extent of some £200,000 yearly around the town of Livarot, in the Calvados Department, Normandy.

Lizards, Dried. — In China lizards are used in medicine for the cure of consumption. They live about four inches under ground, and are taken at night when they come out of their holes. Large numbers are caught about Nanning, in Kwangsi, and about 100,000 pairs are exported yearly from the port of Pakhoi, and a large trade is done in them at Hong Kong.

Lizards' Eggs. — Lizards' eggs are considered a delicacy in many countries, and in the Antilles the eggs of the alligator are highly esteemed; they are said to taste very much like hens' eggs, which they resemble in shape and size.

Loaf Sugar. — See *Cane*, *Lump*, and *Raw Sugar*.

Loblocks. — A sort of Chinese candles made from Pela (see *Chinese white wax*). They are quite characteristically thicker at the top than the base, tapering downward, and coloured bright scarlet.

Lobsters. — Da., Ger., and Sw. *Hummer*; Du. *Zeekreeft*; F. *Homards*; It. *Gambero di Mare*; Port. *Lagostas*; Rus. *Morskoy Rakk*; Sp. *Langosta*; W. *Ceimwch*.

There are several species of these popular fish, identified by naturalists as *Homarus*, or *Astacus Marinus*, and they vary very much in size, some weighing as much as 14 to 16lbs. each.

They live chiefly on rocky sea coasts, and are generally caught in "pots," or traps, made of netting, basket or wire-work, formed with taper necks. The pot or trap, baited with dead fish or other garbage, is attached by a rope to an anchor, and sunk in the sea. Large numbers are caught off the Scilly Islands and Land's End, but about half of our fresh lobsters and crab-fish come from Norway, where special grounds are diligently cultivated. The best come from Heligoland.

It is illegal (by 10 & 11 Wm. III. c. 24) to offer for sale lobsters less than 8 inches from the tip of the nose to the end of the middle fin of the tail.

They are very slow growers, the ordinary sized specimen served broiled —say eight inches to a foot in length— is twelve or sixteen years old. It is not large enough to be eatable at all under four years, and it does not begin to reproduce until it is 8 years of age. Therefore, it is difficult to replenish the stock artificially.

Lobsters are often kept alive for months in the pots, with such food only as they can gather from sea-water.

These marine, stalk-eyed, long-tailed, and ten-footed crustaceans are both carnivorous and predatory. They have two pairs of "feelers," or claws, one short pair and the other long. The left claw is larger, heavier, and rounder than the right, which is finer, more slender, and furnished with smaller and sharper teeth. Lobsters are very fond of fighting, often losing a limb in their combats, but new limbs soon grow again.

A lobster does not breed every year, but, like the *crab*, it moults or casts its shell periodically—the young ones oftener and the old ones seldomer. When about to cast their shell they appear very sick, languid, and torpid; their flesh is then found shrivelled, and in the shells an excess of watery fluid.

The new shell is of a light colour, and the older shell bluish-black, the latter being usually preferred. The familiar bright red colour is, or should be, entirely due to the boiling.

Young lobsters are hatched in June or July.

Spiny Lobsters, or *Fresh-water Lobsters* (so-called), are not really lobsters, but *cray* or *craw-fish*, and are much inferior in flavour. Their shell is very hard, and their whole body is rough with short spines. They have no pincers, the first pair of feet or claws being very similar to the other. The antennæ of cray-fish are also much

longer and larger than those of the true lobster, and the last ring in the thorax is moveable.

Fresh lobsters in England are most plentiful in June and July, when they approach our coasts for spawning purposes; but they are finer flavoured in the winter season, say from October to May. Lobsters are, however, very indigestible, and should always be well masticated.

A good lobster should be heavy, and not give a splashy noise when shaken; the tail should remain closely and firmly bent under the body—not limp, but springy, the latter showing freshness. The flesh is chiefly in the claws and tail.

The female, or hen lobster, is most esteemed, on account of the eggs or spawn, which are generally used for making *lobster sauce*, and is at its best when in the condition known as a "berried hen."

We have heard of hawkers colouring lobster and cray-fish with red paint, to give old and inferior fish a bright appearance.

Lobsters Preserved in Cans or Tins.—These are chiefly prepared in Newfoundland, Maine, Nova Scotia, or New Brunswick.

The fish there are now artificially propagated, and the fishing season restricted by law. It was found a few years ago that without such replenishment and method the lobster industry would soon be extinguished.

For the last five years there have been numerous complaints about the small size of the lobsters used for tinning purposes, but stringent regulations have just been made by the Dominion authorities to prevent this and all other illicit packing.

The Newfoundland Fisheries Board, following on similar lines, in 1896 adopted rules providing, among other things with regard to lobsters, that canners must take out an annual licence, that there be a close season from August to April, that spearing and hooking be prohibited, and for annual returns from the canneries.

Short weight in these goods also has repeatedly excited attention in the trade, and ought to be carefully guarded against. It is well known to many members of the canned-goods trade that during the last few years large parcels of short-weight salmon and lobster have been distributed through the country. This has been brought about by carelessness on the part of packers, unscrupulous competition, and lax habits of buyers in passing contracts.

On August 9th, 1887, the following terms were adopted by the London Chamber of Commerce (preserved food section):—"*A No. 1 tin of salmon or lobster shall average 16 ozs. net. Provided the parcel averages 16 ozs., individual tins shall not be rejected or claimed for as short weight unless net contents are under 15½ ozs.*"

This subject is one of real importance, and one that merits attention.

Cape Lobsters.—Few industries have developed more rapidly or successfully in the Cape than the preserving in tins of craw-fish or lobster. The lobsters exist in Table Bay literally by millions. Quite a little fleet of fishing boats are engaged in their capture, and from early morning to noon the process of discharging their living cargo makes Granger's Bay a busy scene. The boats come alongside the jetty, where a heavy iron basket is in readiness, and is lowered to the gun-whale, filled, hoisted on to the stage, and thence dispatched along the ærial tram-line, which is worked by steam-power. The lobsters are then introduced to the cooking-room—a large apartment containing two lines of huge boilers and steamers. Scarcely have they arrived before the great iron-cooking cylinder, which contains about 150 fish, is lifted bodily into the boiler, and is submitted to the cooking process. This is soon complete, and the "pot" is then lifted out, dropped on to a trolley, and run into the next department, which is devoted to cooling and cleaning. The cooling is done like everything else with great rapidity. The pot is placed under a large shower-bath arrangement, and the deluge of salt-water soon reduces the

temperature from boiling point to zero. The fish are then placed before about 100 girls and women, who, under the guidance of experienced foremen, dock them of their tails, the only part used for canning, extract the succulent-looking flesh, trim it into shape, and place it in oval-shaped tins. No sooner is the fish in tins than these are taken into another part of the factory, when, in a space of time that would seem incredible, the tins are hermetically sealed. The next process is to steam those tins, which, at the number of 700 at a time, are submitted to a very high temperature for nearly an hour, the object being to sterilise the contents and fit them for export. Subsequently the tins are labelled, packed in fresh clean cases, and then dispatched to all parts of the world, whilst considerable quantities also go up country in South Africa.

Lobster, Potted.—American tin lobster is largely used for potted lobster. Two parts of that go to 1 part of ground rice; and a little butter-colouring to bring up the tint. The spice is a mixture of equal parts of powdered mace, cayenne, and nutmeg.

For tinned lobsters, apply to Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool (proprietors of the "Bardsley Island" brand).

Locksoy.— Rice boiled to a paste and drawn into threads. It is imported from China, and used to thicken soups.

Locust, or Carob Beans.—F. *Caroubes;* G. *Johannisbrot;* It. *Carrubbe;* Sp. *Algarrobas.* (Also known as *Algaroba Beans, St. John's Bread, Sugar Pods,* etc.)

All these names are given to the sweet pods of the Arabian Karoub, or Carob tree (*Ceratónia siliquia*), a species of legume. The bush, or tree, will grow about 20 feet high with a trunk about 3 feet in diameter. It is largely cultivated in countries bordering on the Mediterranean, especially in such as suffer from periodical droughts, its long roots pentrating to a great depth in search of water, and its thick dark evergreen foliage affording a cool and grateful shade. Each tree will yield about 1oolbs. of fruit yearly. The tree is peculiarly Oriental, very abundant in South Italy, on the Adriatic coast. The enterprising Prince of Belmonte grows immense quantities in his plantations at Licosa and Tresina, in the Bari region, province of Salerno, and is ever enlarging his operations on land which has hitherto been absolutely unproductive. In Sicily a spirit and syrup are made from the pods, and in Vienna locust beans are sold on every street fruit stall. The pods are used in a variety of ways. They are often powdered and mixed with flour for making bread. A drink is prepared from the expressed juice. A gum is also obtained from the plant. The pods, not unlike those of our broad beans, are largely imported into this country in a dried state from Egypt, Naples, Sicily, Candia, Cyprus, etc. They are quite tough, hard, almost black in colour, but very sweet and nutritious. Locust beans contain about 66 per cent. of sugar and gum, and twice the fattening properties of oilcake. A clear, honey-like substance may be extracted from them, and this has often been used instead of sugar and farina in the manufacture of chocolate paste for drinking purposes. These pods are by some supposed to be identical with the "locusts and wild honey," on which John the Baptist lived when in the wilderness, and hence the name "*St. John's Bread*"; but the North American locust-tree and that of the West Indies are different from each other, also different from the locust-tree of Scripture, and it seems more probable that St. John fed on the insect locusts (*Gryllus migratorius*) which are eaten to this day in parts of Africa, either parched, roasted, or pounded and made into bread. They are sometimes salted. Locust beans in England are to be had whole, kibbled, or ground at 90/- to 110/- per ton, and are chiefly used for making artificial cattle foods. They are also largely patronised by children, and chewed whole as a sweetmeat. The pods contain very hard beans, which are only useful for seed, as horses leave them in their mangers, and if by chance they

swallow them, it is found they do not digest them. During the Peninsular war the horses of the French cavalry were mainly fed on these fruits. They are considered poisonous or unwholesome until ripe, and should never be eaten in quantity, because they contain butyric acid, which is apt to turn rancid, but 5 or 6lbs. a day, mixed with chaff or other horse foods, are quite safe.

Locust Bean Kernels are sold at about two-thirds the price of the beans themselves.

Log Tea. — (See also *Brick Tea, Gola, Tile Tea,* etc.)—This is a new commodity which has become known on the Hankow market, and so named by the Customs. It is an inferior tea, made with stalks, damaged tea leaves, and refuse, and is packed or pressed in the shape of logs which weigh from 8 to 8olbs. each log. The tea is wrapped in the leaves of the *Bambusa latifolia*, and then reduced in bulk by binding round the log with lengths of split bamboo. This log tea is mostly prepared for consumption in Mongolia, and is packed thus from motives of economy both of packing and of freight.

Logan-berries. — A new type of small fruit; a kind of raspberry bramble, but much nearer the latter than the former. This hybrid is now very popular in the United States, and is a large and handsome fruit, possessing a striking flavour. It was first cultivated by Judge Logan, of California, hence its name, and comes in after strawberries; but it should not be gathered till it has turned a dark colour, or the flavour will be deficient.

Logwood Dye. — A most durable deep red and black colouring matter from the logwood tree of the West Indies. The imports of the wood average 58,000 tons. A syndicate has been formed in Jamaica to extract the dyestuff from the wood where it grows, and besides fostering trade there will be a large saving of freight. About one-eighth of the wood is available for the dye. (Cassella's diamine colours are now most extensively used for blacks, such as linings, Italian-cloth, mohair, and serge, but logwood was a severe competitor in shade, quality, and cost of dyeing.)

Lombard Cheese.—See *Parmesan.*

London Purple. — This is an agricultural insecticide (a poison), rich in arsenic, and consists of residues from the aniline dye factories.

Long Life Tea. — Prepared in Bencoolen from the flowers of the *Glaphyria nitida*, a kind of myrtle.

Long Pepper. — This consists of the long immature fruit-spikes of two varieties of *Chavica*, viz., *C. Roxburghii*, a native of Malabar, and *C. officinarum*, a native of the Indian Archipelago, both climbing plants, distinct from black pepper, or Capsicums.

The fruit pods, or catkins, about 1½ inches long, grow nearly straight, and opposite the leaves. They are gathered before they are ripe, and dried in the sun, when they become brown or dark grey in colour, rough to the touch, and very pungent. The seeds grow so close together on the spikes that in ripening they become a compact mass.

Long pepper is mostly used for making pickling-spice, and for similar purposes as other pepper, but though equally pungent it is less aromatic, and usually cheaper in price. The roots and stems are used in India as a stimulating medicine called "Pippua moola."

A larger variety of this species of pepper is known as *Elephant pepper.*

Lontar Sugar.—Sugar made from the sap of the *Palmyra* palm.

Loofahs or **Towel Gourds.** — These tufts are the netted tissue of the fruits of *Luffa egyptiaca*, a climbing plant, native of Egypt and Arabia, but grown also in the West Indies and Western Africa, where it is generally known as the *Towel Gourd.* The natives use this vegetable sponge or network of fibre for straining palm wine and other fluids, as well as for scrubbing-brushes,

and making light ornamental articles, such as baskets, hats, etc. In Germany they are manufactured into soles or socks for boots to keep the feet dry and warm in winter and cool in summer. Also used for saddle undercloths, surgical bandages, etc. They are commonly used as flesh brushes or rubbers and particularly in Turkish baths.

Lopatny Tallow.—A description of Russian tallow, known as "second-candle tallow."

Loquats or **Japan Medlars.**—See also *Cumquats*, *Guavas*, etc.)—These are sometimes erroneously called Japan plums, but they are entirely different.

Loquats are a species of medlar or apple obtained from the *Eriobotrya* or *Photinia japonica*, a beautiful evergreen shrub or tree, native of China and Japan, and is grown either from fresh seeds or from layers and cuttings. It was first introduced by Robert Fortune and is now cultivated in several warm temperate climes, as Madeira, Australia and Africa. It may also be grafted and budded on the quince and hawthorn, which are closely related trees, and grow from 12 to 30 feet high. It is often seen in this country as an ornamental plant. In Florida the tree blooms in September, and the fruit (which is there used fresh, like cherries) ripens in February or March before any other kinds.

The leaves are oblong, and nearly a foot long, thick, shiny, and wrinkled; the flowers, small and white, grow in umbels or spike form at the end of the branches and have a delicious fragrance similar to hawthorn blossom. The tree is a profuse bearer and the fruit, about the size of a large gooseberry, is downy and yellow coloured like the apricot, some varieties being globular and others pear-shaped, and each fruit contains three stones or pits. The fruit does not pull very easily from the stem, and in gathering for shipment the whole stem is usually cut off so as not to injure the fruit.

Loquats will bear travelling well, and sell readily in the shops, although having been gathered before ripe they are sometimes found very insipid. When fresh they have a peculiar pleasant acid taste, between tamarind and pineapple, but are mostly converted into jelly before reaching England, and this jelly is considered superior to that of the guava.

Lovage. — Ar. *Amoos*; W. *Dulys*. The common name of the plant *Ligusticum scoticum*, the acrid leaves of which are eaten crude, as a salad, or boiled as greens, and, though aromatic and stomachic, are very nauseous; the stem yields English opoponax, and the roots are reported to be carminative.

A popular liqueur or cordial called Lovage is made as follows:—

To 1 gallon of gin, mixed with a pint of clear syrup (sugar and water), add a tincture made by macerating 1lb. freshly cut celery roots and 1 oz. of sweet fennel in pure spirits for a couple of days, and straining by pressure; add 1 drachm of oil of cinnamon, 30 drops of oil of carraway seeds, and strain clear.

Another way:—Mix 5 drachms of nutmeg, 5 drachms of oil of cassia, and 3 drachms of oil of carraway in a quart of strong spirits; then dissolve 20lbs. of sugar in hot water, add this to the spirit, with a little colouring, and fill up the cask with water. Afterwards fine it down with 2 ozs. of alum dissolved in boiling water; put this into the cask hot, adding 1 oz. of salts of tartar, and finally stir the whole well together.

Love-apples. — An old-fashioned name for *Tomatoes* (see latter).

Lovi-Lovi.—The fruit of *Flacourtia inermis*, imported from the East, but, although very refreshing and agreeable to the taste, it is rarely seen in this country.

Lozenges and Drops.—F. *Pastilles*. The difference between these confections is this—drops are formed out of boiled sugar, or gum, combined by the aid of heat, while lozenges may be made with or without heat, and are often medicated. The ingredients for the lozenge, being powdered and mixed

with gum or other glutinous liquid and colouring matter, are formed into a pasty mass, then rolled out into an even sheet of the required thinness, and, finally, by the aid of very ingenious machinery, passed on under a cutter which comes down and cuts out a number of the required shape, small circular, square, or oval tablets, or flattened cylinders, the waste falling beneath the machine to go back to the entrance. The next operation is stamping. In some cases this also is done by machine, but sometimes by hand by means of dies; while the mottoes are imprinted by means of a stamp and a little harmless colour. They are afterwards carefully dried on trays in a warmed room, and should be at once closely covered in either air-tight bottles, jars, or canisters, and in a cool place, not near a fire, nor in a warm sunny window, or they will soon spoil.

Lozenges, especially medicated lozenges, should be sucked, not chewed, so that their properties pass gradually on to the palate, and act on their way to the stomach.

The following is given as an ordinary mixing of lozenge paste for medals and mints:—

Dissolve 3lbs. of good Turkey gum in a quart of cold water; ½lb. thin pale gelatine in a pint of water, and add ½ pint of white glucose. When the above are dissolved and put together, add boiling water sufficient to make the mixture up to 5 quarts, which will then serve for 108lbs. of sugar. The liquid should be warm when added to the sugar. (See *Peppermint Lozenges.*)

When making a mixing for small goods, such as cachous, etc., requiring paste less stiff than the larger class of lozenges, add a little more water than above.

Lubricating Oils. — F. *Huiles à graisser;* G. *Schmieroel;* Sp. *Aceite para engrasar.* (See also *Oils, Petroleum, Castor Oil,* etc.)

During recent years machinery has increased amazingly, and the lubricants used have altered considerably, so that the amount now annually spent in this country in oils for the lubrication of machinery, stationary and afloat, is enormous.

It is only recently that the scientific laws which regulate perfect lubrication have been at all comprehended, and no single sort of oil has been discovered that will lubricate satisfactorily and economically all the bearings found in any mill, but, by a discriminating choice, three or four oils may be chosen which will answer the requirements of a purchaser far better than any one oil.

The great majority of the oils now used for machine lubricating are mixtures of hydro-carbon and saponifiable oils. The British, the Italian, and some other Governments now use minerals oils exclusively. The saponifiable oils chiefly used in the making of lubricating mixtures are:—Brown cotton seed (an execrable lubricator), brown rape, neatsfoot, lard, tallow, and castor oils. Seal oil acts least on iron, and tallow the most. Bronze is not injured by colza, and only very slightly by olive oil, but linseed oil corrodes it quickly. Olive oil is best for lead; whale and sperm bad. Lard oil is best for zinc, mineral oils good, and sperm the worst.

Apply to C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Lucca Oil. —(See also *Tuscan Oil, Olive Oil, Salad Oil.*)—Lucca is the name of a large town about fourteen miles from Pisa, and has a considerable trade in the excellent oil produced in the magnificent olive groves in the surrounding mountains and hilly districts. The oil is mostly shipped at Leghorn, and is exported in casks and in 40-gallon jars, the latter being thought preferable to wood for choice qualities. The pests of the olive grower here are the "ver" and the oil-fly (*mouche huilière.*) Cold, however, drives away the former, but rainy seasons attract the latter.

(Lucca is the chief centre of the province, from which come most of the itinerant figure-vendors, stucco-workers, and "organ-grinders," usually a very industrious and frugal people.)

Leading Importers of the Pure Oil. —Charles Cocks & Co., Reading, Berks; J. A. Sharwood & Co., Ltd., St. George's House, London, E.C.

Lucifers. —(See also *Matches* and *Safety Matches.*)—These matches, so called after Lucifer, son of Jupiter and Aurora, are ignitible by friction on any dry surface.

They used to be called *St. Romers*, and were first invented in 1827 by the late Mr. John Walker, chemist, Stockton-on-Tees, who called them "*Friction Lights*," but the tips were very apt to break off when struck on a rough surface and set fire to anything with which they came in contact.

In 1829 Mr., afterwards Sir, Isaac Holden, M.P., introduced an improvement, and called his matches Lucifers, but in 1895 he admitted Walker's priority of invention.

The history of Mr. Walker's success runs thus: In the course of the experiments he was wont to make, he one day discovered a mixture which ignited on being rubbed in the mortar. He conceived the idea of applying it to the ends of the old-fashioned sulphur-tipped spills of wood used in the tinder-boxes of that date. The result was the friction match.

"A few days after his discovery," writes Mr. A. H. Bone, "my grandfather was in his shop, and Walker showed him the new idea. My grandfather pointed out the importance of the discovery and advised him to take out a patent. This he magnanimously refused to do, saying that, as he was not in need of money, he would make a present of his discovery to the public, being well aware, however, of the value of it."

Walker started to make and sell matches, and Mr. Bone says that in his day-book can still be read the announcement of the first transaction in matches, an old coach-driver becoming the happy owner of fifty of these in a tin box for the sum of one shilling.

Mr. Walker was well known, not only for his scientific attainments, but also for his benevolence, and was locally known as "Dr." Walker. He died May 1st, 1859.

Lucifers are commonly made from small splints of wood, tipped with some inflammable substance, such as chlorate of potassa and sulphide of antimony; or more commonly of yellow phosphorus and nitrate of potash.

There is only one factory in Scotland, but several in England, particularly in London.

It has been found that this white or yellow phosphorus necessary in making these "strike-anywhere" matches, throws off a deadly poison, which affects the workers in match factories, and produces a terrible disease, known as necrosis of the jaw or "Phossy-jaw" (phosphorus jaw).

The public, however, both at home and abroad, will have these strike-anywhere matches, and it is found that there is therefore about 60 tons of this deadly yellow phosphorus used every year, and only about four tons of the harmless red or amorphorus kind, which is used for safety matches.

Lucknow Chutney. — (See also *Chutneys.*)—A popular Indian condiment composed of fruits and vegetables cut into large slices, somewhat sweet to the taste and moderately hot.

Lumbang Nuts.—The nuts of tne *Alcurites triloba* and *Moluccensis*, from which an oil is expressed. (See also *Candle-Nuts.*)

Lump or **Loaf Sugar.** — Often technically termed *Stoved Goods.* In making it raw sugar is first re-dissolved in hot water, some albumen added, and, if required, a little lime-water; it is then boiled, skimmed, and clarified by filtering through animal charcoal; then subjected to a great heat, and, when at the proper degree of syrup, is poured into conical moulds to crystallise and solidify. The mass is further purified by allowing a pure solution of liquid sugar to drain through, and this carries down the last traces of the coloured syrup to the apex or pointed head of the loaf. The apex of the

mould is perforated so as to allow the syrup to drip, and when the loaf is knocked out of mould (the wet nose being cut off) it is finally dried off in a hot chamber. Very little sugar, however, is now made in the loaf or titler form. (See *Cube Sugar*, p. 309.)

Good lump sugar should feel dry to the touch, be hard to break, close in texture, and have a sparkling appearance when broken. It should also have a bluish tint rather than yellowish.

Lunch Biscuits.—These are made in various shapes and sizes, plain, round, and oval. Take 12lbs. of fine, soft white flour, 1lb. of pure American lard, 1 oz. of carbonate of soda, 1 oz. of tartaric acid, 1 oz. of salt, and 3 to 3½ pints of water.

Sift the flour and rub lard in; pulverise the carbonate of soda and the tartaric acid, and mix well with flour. Make a bay, pour in the water, add the salt, draw in the flour, and mix thoroughly well into clean dough, not sparing elbow grease, and remembering also that doughs well made are half broke. Break down through the machine until the surface is quite clear, and the surface of dough is smooth, clear, and glossy. Break the dough down to cutting out size, about the eighth of an inch thick, and cut out with a steel spring cutter, about three inches in diameter. Plate off on small meshed biscuit wires, and bake in a very warm pastry oven.

Lunel Wine.—A renowned muscat wine produced around the town of Lunel (Herault) in France. It usually contains 15° to 20° of alcohol.

Lunettes. — A popular form of crystallised or *Glacé* (glazed) fruits. The fruit or apple paste used is cut into long strips, about 5 inches long by ¼ inch wide, and bent so as to imitate eye-glasses or spectacles, hence the name *Lunettes*, which is French for spectacles.

Lupulin. — A bright yellow or brownish resinous secretion in the form of powder found covering the fruits, as well as the flowers, axis, and base of the leaves of the hop plant. It really consists of shining translucent glands, which are globular or ovoid in shape. It posseses the aromatic and bitter taste of hops, and is used as a substitute for them.

Its quality mainly depends on its freshness and freedom from foreign substances.

Genuine lupulin should not yield, on incineration, more than about 15 per cent. of ash, and not more than 30 to 40 per cent. of it should be insoluble in ether.

It is mostly used by brewers and herbalists, but is often found largely adulterated with quassia—sometimes to the extent of 40 to 70 per cent.

Lustre.—See *Plumbago*.

Lychees or **Letchi Nuts.**—(Sometimes spelt *Lichis*, *Laichees*, etc.; also known as *China Nuts*.)—Native of China, but grown also in Réunion, Mauritius, India, and other hot countries.

The fruit of a fine hardy tree, *Nephelium litchi*, and for which Mozufferpur, in Bengal, is noted. Once reared, it goes on bearing fruit for generations, especially if manured. Hot winds, heavy rains, and even frost 5° below zero never trouble it. This pretty nut has the size and form peculiar to the strawberry or raspberry. The outer surface is a thin brittle shell, beautifully indented with innumerable small granules, corresponding to the seeds of the familiar fruits named. This delicate shell is of dark brown, or chocolate colour, and is easily crushed between the finger and thumb. The inside pulp has the taste and consistency of the prune, only softer, and contains at the core a large, hard droop or stone like that of the date.

We look in vain in England for *fresh* Lichis, which are amongst the most delicious morsels it is possible to conceive when in a perfectly ripe state. The pulp is then cool, slightly acid, and refreshing, but at present we only receive them in a dried, somewhat shrivelled, and blackened state, as above described.

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Mabo or Mabolo Nuts.—These fruits, *Diospyrus discolor*, are of an oblique-ovoid form, two inches or more long, and about an inch in diameter, with a very rough or channelled surface. The flavour is exquisite, but the odour is somewhat objectionable. The seeds are very rich in oil of a very fluid character. They are cultivated in Mauritius. Both the seeds and fruit are imported into Liverpool from Liberia.

Macao Teas.—(See also *Lie Tea, Maloo Mixture, Exhausted Teas, Tea Substitutes*, etc.)—From the Portuguese possession of Macao some 100,000 packages of these reach the London market yearly, and they are generally compounds manufactured from exhausted tea leaves, which have been dried, refined, and mixed with a certain proportion of genuine tea, and of seeds and dust. This blend is pretty correctly described as *Lie Tea*, and a good deal of mystery enshrouds its ultimate fate. A more considerable trade is done in it at Hamburg.

Macaroni.—G. *Nudeln;* It. *Maccheroni Pasta;* Port. *Macarrao;* Sp. *Pasta de Macaroni.* (See also *Italian Paste, Vermicelli*, etc.)

A species of dried wheaten paste, formed into straight or twisted hollow tubes or pipes, varying in diameter from that of a long tobacco pipe to a full inch.

It is usually made from the best wheaten flour and with a little water worked into a thick paste, then put into a strong cylindrical tube which has small crescent-shaped holes at the bottom. By means of a piston or piece of wood or metal plate made exactly to fit the inside of a tube and a screw press, the paste is gradually and slowly forced through the holes in long stringy ropes, while a heated stove quickly dries or partly bakes them as they descend, causing them to shrink, and their crescent-shaped edges to unite and assume pipe form.

At the proper instant the pipes are detached, twisted, and hung over rods placed about the room or in the open air to dry more perfectly—first at a temperature of 65°, then 70°, and finally 75°, and in a few days the macaroni is ready for use. An improved method of giving the tubular form to the macaroni is to have at the bottom of the cylinder large circular holes, and a long rod parallel to the axis of the cylinder enters the latter through the centre of each hole. The drying is the most difficult and delicate part of the process.

The best curled or twisted macaroni comes from Genoa, usually in large cases containing 144 small wood boxes, each holding about 4lbs. nett. "Naples" is mostly in long straight pipes or sticks packed in 28-lb. boxes.

At least the boxes are supposed to contain that weight when packed, but the paper is weighed in, and such pastes always dry afterwards, so the grocer rarely gets 28lbs. nett.

Prices 3½d. to 6d. per lb., according to colour, quality, and maker's reputation.

Macaroni is eaten with a relish equally by all civilised European peoples. At the commencement or close of a dinner, in the character of sweet or of savoury alike, it is deservedly as popular without as within the frontiers of its native land. But the incident which originally gave it its name is, a contemporary believes, known to few of those—even in Sicily, its birthplace—who hold it in the highest esteem.

Once upon a time a wealthy Palermitan noble owned a cook, not only accomplished beyond compare in the practice of his profession, but gifted by nature with an inventive genius. One day, in a rapture of culinary composition, this great artist devised the farinaceous tubes which all love so well, and the succulent accessories of rich sauce and grated parmesan,

familiar to those who have partaken of *macaroni al sugo*. Having filled a mighty china bowl with this delicious compound, he set it before his master —a *gourmet* of the first water—and stood by, in deferential attitude, to watch the effect of his experiment. The first mouthful elicited the ejaculation "*Cari!*" idiomatically equivalent to "excellent" in English, from the illustrious epicure. After swallowing a second modicum, he exclaimed "*Macari!*" or "Excellent, indeed!" Presently, as the flavour of the toothsome mess grew upon him, his enthusiasm rose to even higher flights, and he cried out, in a voice tremulous with joyous emotion, "*Ma, caroni!*"—"Indeed, most supremely, sublimely, and superlatively excellent!" In paying this verbal tribute to the merits of his cook's discovery, he unwittingly bestowed a name upon that admirable preparation which has stuck to it ever since.

In cooking macaroni in Naples it is usually boiled in cauldrons, then well drained, saturated with meat gravy, and sprinkled with finely grated cheese. It is also largely used for thickening soups and broths; or boiled first in water and then in milk, with an egg or two added and a little sugar, it forms a nice pudding. (See also *Lazagnes, Reginette,* or *Ribbon Macaroni.*)

Macaroni, as well as vermicelli and some other forms of "paste," is also manufactured in France, but these are not considered so good as the Italian. Large quantities are also made in Trieste, in fact, there are some three dozen different varieties or shapes of paste made and regularly used there, but only macaroni and vermicelli are exported to this country.

Leading Merchants.—Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool; J. A. Sharwood & Co., Ltd., St. George's House, London, E.C.

Macaroons.—F. *Macarons; Massepains;* Port. *Bolos de amendoa.*

These wine biscuits, originally made at least two centuries ago in convents of Italy, and afterwards at Nancy in France by the "*Sœurs Macarons,*" are usually made small in size and very sweet, with flat bottoms and oval tops.

The following recipe will exemplify their composition:—2 lbs. ground or pounded sweet almonds, 3lbs. lawn sugar, 2 ozs. rice flour, 3 ozs. baked flour, and about 1½lbs. white of eggs. Mix the almonds, paste, sugar, flour, all well together, add the white of egg and beat well with a pestle for twenty minutes. Cover up and let lie for half-an-hour to clear, cover sheet tins with wafer paper and drop out suitable distances apart; form a bag with tube, the opening about the size of a threepenny piece, put sliced almonds at the top, and bake in slow oven with the door ajar. They should afterwards be kept in a very dry place.

Ground nuts or pea nuts are often used instead of almonds, as well as ground cocoa-nuts and potato flour, but the macaroons so produced, although they may look equally pretty, are of inferior taste.

Macassar Oil.—The ordinary commercial article is said to consist merely of cocoanut oil or safflower oil, with a little ben-oil, but the original was a fixed oil obtained from the berries of *Stadmannia sideroxylon,* a large-sized kind of tree of the Mauritius. Another is made from one quart of olive oil, half a drachm oil of roses, and 2½ ozs. of alcohol; coloured with alkanet root by tying a small portion in a thin muslin bag and letting it lie in the oil till sufficiently coloured.

Maccouba Snuff, or Maccoboy.—A kind of fine dark brown snuff, usually rose-scented. So named from Macouba, a place in Martinique, where the tobacco from which this snuff was originally made is grown.

Mace.—Du. *Foelij, Muscastbloom;* F. *Macis, Fleur de Muscade;* G. *Macis Muskatenbluthe;* It. *Mace;* Port. *Maxcis, Flor de Noz Moscada;* Sp. *Macio.*

Mace and Nutmegs are both obtained from the same tree; mace being the skinny substance or inner membranous

covering in which the true nutmeg (*Myristica fragrans*) grows, very like the involucre which envelops the common filbert. The nutmeg tree is indigenous to the Dutch islands of the Indian Archipelago. It grows 30 to 40 feet high, with numerous and thick branches, while the leaves, of laurel shape, have a bright, green face, but are of a whitish colour underneath. The flowers are small, white, and bell-shaped, without any calyx. It begins to bear fruit in its eighth year, but is most prolific between the ages of 20 to 35 years, and may continue to bear for upwards of 50 years. The fruit itself is a fleshy and pear-shaped droop, and resembles in appearance and size a small peach, but is rather more pointed at each end. The pericarp or outer coat is about half-an-inch thick, not unlike candied peel, and is often used as a preserve. When ripe this pericarp bursts at the side, and discloses the *mace*, which is then of a bright, scarlet colour, and is the lacerated envelope or burr of the hard black shell in which the kernel or *nutmeg* is enclosed.

When this bright red membraneous substance is removed, it is pressed out flat and dried in the sun, when it assumes a yellowish or light brown tinge, and possesses a pleasant aromatic smell, with a warm pungent taste. In curing it for market it is steeped in sea water and afterwards carefully dried in the shade—not too much, or a great part of its valuable flavour would be lost by evaporation. If too dry it is more apt to break in packing, and if packed too moist it is liable to ferment or breed worms. After being dried it is packed together in bags and pressed very tightly. Besides wild varieties there are, as with nutmegs, two kinds cultivated—the *Green*, from the long nutmeg, which only partially covers the nut, is darker in colour, and inferior in flavour and aroma; and the "*Royal*," which furnishes the finest and best mace, firm, thick, flexible and oily, and entirely envelopes the nutmeg.

Mace is extensively grown in Banda, Sumatra, Java, Mauritius, Cayenne, Martinique, and West Indies.

Genuine mace contains about 11 per cent. of water, 42 per cent. of alcoholic extract, and 2 per cent. of ash.

It should be chosen fresh, tough, and of bright colour, with rich fragrant odour, and oily interior. The smaller pieces are considered the best; but that which is brittle and of little smell or taste is of inferior quality and should be avoided. The qualities are usually classified as Finest Pickled Flake, Fine, and Ground. Mace has been found adulterated with a Malabar product, very like mace in appearance, but thinner, and without any spicy flavour of its own, and when chewed has a resinous taste. The epidermal cells of true mace are much elongated in the direction of the long axis of the arillus, and tangentially flattened; whereas those of Bombay mace are radially flattened.

Mace is also sometimes deprived of a great portion of its essential oil by distillation, and sometimes mixed with wild mace or other flavourless matter.

When suspected to be spurious it should be extracted with boiling alcohol, and the extract filtered; if the mace be pure, the filter takes up merely a faint yellow colour, but if adulterated with "Wild Bombay" mace the filter is coloured red at the margin. This wild *Mace* is a spurious kind, much larger and more cylindrical in shape than the genuine; the several flaps are also united at the apex, forming a conical structure; the anatomical structure is also different, as may easily be seen by the aid of a microscope, the natural colour is much the same, but if a piece be moistened with hydrochloric acid it will assume a greenish colour. It has not the least spicy flavour unless it has been perfumed, and when chewed has a resiny taste, and it is to be had at about one-fourth the price of ordinary Bombay, Java, or Penang.

Mace is usually imported in half picul cases (a picul equals 133⅓lbs.), and pressed very tightly; but the finest and brightest kind is not so closely packed, and is termed "unpressed," and com-

mands a much higher figure. Both are subject to tare allowance. Banda mace of excellent quality reaches England through Amsterdam or Rotterdam in same way as East Indian nutmegs.

Mace Essence.—A brown, spirituous extract usually distilled from the mixed oil found in mace kernels (nutmegs) and not from mace proper. These kernels first yield, by aqueous distillation, two kinds of oil, one highly aromatic and volatile treated as above, and the other a *fixed* oil, retired by means of heat, and often called *Butter of Mace*.

This butter of mace is of yellow colour, and in India is used as a liniment and embrocation for rheumatism, and is a favourite medicine of the Hindoo physician for low stages of fever, etc. An essence of mace is also made from 6 oz. moderately fine mace and 2 pints Cologne spirit. After macerating about fourteen days it is expressed and filtered through paper.

Macedoine.—A French name for a medley of fruit or vegetables, mixed together for compôtes, garnish, etc., hence *Macédoine de Légumes*—a mixture of vegetables, and *Macédoine de Fruits*—a mixture of fruits.

Three or four kinds are also commonly packed separately into the same bottle, thus: first a layer of the finest young and tender green pods of French beans, then a layer of carrot, then white turnip; sometimes a layer of green peas is also added. The carrots and turnips are carefully cut into dice form or tiny squares about the size of peas. Macédoine of fruits is not only a delicious, but a very healthy sweet; and an orange and cocoanut salad is an uncommon and most delightful dish. It is made as follows: Peel half a dozen oranges, and free them from skin, pith, and pips; arrange them in a deep glass dish, and grate over them half a fresh cocoanut, sprinkle with castor sugar, and decorate with square blocks of orange-jelly. Pour over the whole about a pint of strawberry syrup to which has been added a liqueur-glassful of either brandy, noyeau, Benedictine, or any other liqueur best liked. Place on ice till served.

Macédoines are sold in 1s. tins and in 1s. 6d. bottles, the latter usually of white flint glass of elegant shape, and when artistically labelled contrast prettily with the fresh colours of the vegetables, the whole having a very appetising effect.

Mackerel.—F. *Maquereau;* G. *Makrele;* Sp. *Escombro.*

The mackerel (*Scomber scombrus*) is a very beautiful and active deep-water sea-fish, about fifteen inches long when full grown, weighing about a couple of pounds, and of a rich dark blue colour on the back, with darker wavy cross streaks towards its light silvery underside. They have their home in the deep parts of the ocean, but they come to the coast in large "schools" or shoals, each year in April to June to spawn, and are caught off the coasts of Sussex, Hampshire, and Devonshire, also the southern shores of Ireland (Kinsale, etc.).

They are extremely predaceous and voracious, and prey largely on sprats, herrings, pilchards and other small fish. They are mostly taken at night in long drift nets, say 120 feet long by 20 feet deep, which are made of small fine twine and tanned so as to stand salt water. The fish are caught in the meshes by the gills, the mesh admitting the head but not the body, and are marketed next day. If eaten fresh they are considered very excellent, but they are the most delicate of fish, and only remain in good condition for a few hours after they are taken from the sea. Young mackerel, when four to six inches long, say in August, are called *Shiners*.

They are also taken by hook and line, and will bite at almost any bait, even at a red rag.

Liverpool is, and has been for a long period, a distributing centre of this well-known and useful fish, and there is an enormous export of pickled mackerel caught off the Irish coast to the United States, where it seems to be a prime favourite, although subject to a duty of two dollars per barrel.

Macon Wine (*mak-ko*).—The name of a once popular French muscat wine, almost like Burgundy, but lighter. It takes its name from the town of Mâcon, the capital of the department Saône et Loire, but owing to meteorological changes in France, muscatel grapes can now scarcely be made to thrive there.

McVitie and Price's Oatcakes.—St. Andrew Biscuit Works, Edinburgh.

Mad Apple.—An American name given to the egg-plant on account of the peculiar roving manner of its growth. (See *Egg Plant.*)

Madagascar Arrowroot.—This so-called arrowroot (native name *Mangahazo*) is obtained from the roots of *Pacca pinnatifida*, and is a staple article of diet in the west of that island. (See *Arrowroot.*)

Madder.—F. *Garance.*

Largely cultivated in the Rhone Valley, near Avignon, France.

Madeira Cake Recipes.—1. Take 5 lbs. good lump butter, wash all the salt out and add 7½ lbs. pulverised sugar, not too fine; work well together, and beat till quite light and creamy. Have ready 7½ lbs. broken eggs well whisked, which add from time to time, thoroughly amalgamating with the sugar and butter. Then work in gradually, carefully, and perfectly 8¾ lbs. of soft and white flour. Fill into hoops, slightly dust with fine sugar, put two slices of citron peel in each cake, and bake in a moderate oven.

2. A nicer but dearer mixture is:—5 lbs. butter, 5 lbs. sugar, 5 lbs. 10 oz. eggs, and 5 lbs. 10 oz. soft white flour.

3. A cheaper kind is made with 3 lbs. flour, 1½ lbs. butter, 1½ lbs. sugar, 10 eggs, 3 gills of new milk, and ½ oz. of baking powder, flavoured with essence of lemon.

Madeira Wines.—F. *Madères.*

These are the well-known wines exported from the Portuguese island of that name, although wines of other countries have been frequently pushed off as Madeira's viz., "*Madère de Malaga*," "*Madère d'Espagne*," "*Spanish Madeira*, and Cette wines. This is now stopped, and the brand or name of "Madeira" or "Madère" can only now be applied to wines coming from that island.

The annual production in Madeira is some 10,000 pipes, and about half of it is taken by England, France, Germany, Russia, Denmark, and Sweden.

The principal varieties are Malvasia, Malvoisie, or Malmsey, Bual, Sercial, Tinta, Verdelho, and Madeira, but the best "Madeira" is fortified wine of strong body, sweet and full flavoured, with excellent bouquet.

Bual is a soft, rich, and delicate wine old or new, made from a round, straw-coloured grape, which it is necessary to cut as soon as ripe, otherwise it shrivels up and yields but little juice.

Sercial is dry and light coloured, of strong aroma and high flavour, and is not considered fit for the table until 10 years old. When new its taste is very unpleasant, and the grape is quite uneatable.

Tinta, sometimes called *Madeira-Burgundy* on account of the dark colour it receives from the husks of the grape, which are allowed to remain in the wine during fermentation, and which give it an astringent property, not unlike port, is best when one or two years old, but after that it begins to lose flavour.

"*Madeira*" is the principal wine of the island, also cheaper and more largely produced than all the others combined. Being of greater density than the wines of the Continent, it requires longer to mature properly; but this is too often hastened by artificial heating, either by hot flues or exposure to the sun. When new, it is of a light claret colour, but as it advances to maturity, it gives way to a bright amber.

It is produced from a mixture of black and white grapes, or of Tinta (black) and Verdelho (white) wines, and its sale appears to be on the increase, though the consumption cannot be much enlarged because of the limited area of the island.

The mellowness of Madeira is much increased when it has been ripened by a voyage to a hot country and back again; hence it is sometimes sent in butts to the East Indies or to the Cape, stored there a short while, and then re-shipped to its destination. That which has been to the East Indies is considered the finest, by virtue of the greater heat of that climate; hence the terms East and West India Madeiras. It is shipped from Funchal, the capital. A hogshead contains 92 gallons.

Madeiras usually contain 10 to 12 per cent. of pure alcohol, and are somewhat darker in colour than sherries. Like ports, their quality improves very much with age.

Malmsey Madeira is light coloured, made from a large oval grape of rich colour when ripe, and which grows in one part of the island only—the valley of the Camal de Lobos, in the South of Madeira. It constitutes an excellent beverage for the dyspeptic, the sedentary, and invalids generally, and is also a general favourite with connoisseurs. Madeira requires great care in decanting, and the vessel should be quite as warm as the wine that enters it.

Within the last few years many of the best wine districts on the north side of the island, which for some time past have produced but little wine, have gradually been replanted with phylloxera-resisting stocks, and there is a better prospect of increase in vintages. Madeiras, however, are not sought for in England as they used to be.

Madras Chutney. — (See also *Chutneys.*)—This is a moderately sweet but hot variety of chutney, in a paste or pulped form.

Mafurra Tallow.—This yellow fat is obtained by boiling in water the seeds or kernels of the mafurra tree found in Mozambique, Madagascar, and Isle de Réunion. The seeds are about the size of small cacao beans, and the fat has the smell of cacao butter. It melts more readily than tallow.

Maggi's Soups. — Extracts of meat, enclosed in gelatinous capsules or tubes, which readily melt in hot water, and make a very fine soup. They are highly flavoured, but the Messrs Maggi being a foreign firm, and their factory at Kemptthal, Switzerland, we do not know what kind of *meat* is used. They make up about three dozen sorts of soups with Barley, Peas, Rice, Sago, Carrots, Fish, Onions, Melons, Curry, etc., etc.

Magnesia.—This is really one of the primitive earths, having a metallic base, and takes its name from Magnesia, a city in Asia Minor; but the term is now often used to designate the light volatile powdered carbonate of magnesia which is obtained from Epsom salts (the sulphate of magnesia) by mixing the salts with carbonate of soda and boiling water, then evaporating to a white and almost tasteless powder which is insoluble in ordinary water, but it readily dissolves in water containing carbonic acid gas, and in this form it is called *Fluid Magnesia.* Grocers and others are frequently fined for supplying the carbonate instead of the chloride of Magnesia, when magnesia is asked for. The carbonate is often even labelled as "pure magnesia," which, of course, it is not, and only worth about half the price of the pure.

Magnesia is considered an excellent and safe remedy for acidity of the stomach. Dose for adults—1 or 2 ozs. of the solution, or 10 to 20 grains of the powder, taken in a glass of water.

It is also a mild purgative. Carbonate of magnesia, in lozenge form, is also a very popular specific in such cases.

Chief adulterant, *lime.*

Magnesia, Granulated Citrate of.—The popular name for a granular effervescing compound usually sold in sealed bottles. It consists of a mixture of bicarbonate of soda, citric and tartaric acids, and sugar, with a very little of Epsom salts, and is an aperient.

Gardner's patent "Rapid" Sifter and Mixer, freely used for above. Prices from 50s. to £100. Catalogues from Wm. Gardner and Sons, engineers, Gloucester.

Magnum Bonums.—See *Plums*.

Mahogo.—A name for the Cassava, Manioc, or Tapioca plant of Zanzibar, where it flourishes in the greatest profusion, and constitutes the staple article of native food, but they do not yet manufacture Tapioca there.

Mahoree.—A name for aniseed in Bengal.

Mahwa, or Mowra Flowers.—The fleshy corollas of the plant *Bassia latifolia*, yield an important article of diet, both fresh and preserved, to men and animals in India. Attention was first drawn to Mahwa flowers for feeding cattle and distilling purposes in England in 1877. They are succulent and sweet, not unlike raisins, but with heavy cloying taste and smell. Besides its abundant saccharine flowers, the seeds of the plant yield about 33 per cent. of butter, which is imported into this country for soap and candle-making.

Maize, Indian Corn, or Mealies.—F. *Mais;* Ger. *Turkisch Korn, Mays;* Ind. *Yavanala*; It. *Grano Turquo o Siciliano;* Port. *Milho;* Sp. *Maiz.*

Supposed to be a native plant of tropical or South America.

Maize has long been the main dependence of the Indian tribes, and was found to be cultivated for food by both the North and South American Indians when that Continent was first discovered, hence its popular name of "Indian corn," or in the States "Corn," and must not be confounded with the wheat of India.

The varieties of maize are almost numberless, and are attributed to difference of latitude, length of growing season, quality of soil, and mode of culture. There is no other species of cereal which manifests itself under such various forms, sizes, colours, and chemical constituents. The plant itself, *Zea Mays*, is an annual, growing 3 to 18 feet high, with ears 2 to 18 inches long, containing about 600 grains, set close together in rows.

It is now cultivated in Italy, particularly in Lombardy, Venice, Emilia, and the Marches, and in many other countries of Southern Europe; also throughout a great part of Asia and Africa, where it is known as *Mealies*, and called by the Kaffirs *Umbild*. But it is most extensively grown in America

MAIZE.

and Roumania. There are a few varieties of maize which in favourable years will ripen in the southern parts of England, but only in favoured spots in sheltered gardens, so that the uncertainty renders their cultivation valueless, except as ornamental plants. Even the tender, green, and milky cobs are neglected for other more toothsome vegetables in season here at the same time, but it might sometimes do as a fodder crop. Throughout North America, however, it forms over 60 per. cent. of all the cereals combined, having in-

creased about 142 per cent. during these last twenty years. The acreage is now some 80 million acres, and the annual yield about 2,000 million bushels. Three-fourths of it is grown within 450 miles of Springfield, Illinois. The imports into England have trebled during the last twenty years, while the prices are considerably less than half what they were.

No other farm crop appears adapted to such a wide range of uses. In the States it is sown in spring, gathered by hand or harvested about September, and the husks, when perfectly dry, are stripped off, and, together with the stalks laid by for winter fodder. In certain orange districts in the South of Europe the husks or sheathing leaves are commonly employed to wrap round oranges as they are placed in chests ready for exportation.

Indian corn (either unshelled, shelled, or ground) has long been largely used for feeding stock of all kinds, and even fowls, but the latter form has been found to be the best, the others being considered wasteful.

Millo Maize is a yellow variety, mostly grown for stock. As a green fodder it is excellent. It grows 8 or 10 feet high, can be cut back several times, and yields five or six times as much as common maize.

We know little in England of several of the foods prepared from maize on the other side of the Atlantic, such as Mush, Hominy, Samp, Succotash, Supporne, Johnnycake, Corn oysters, Canned corn, Pop corn, Hulled corn, Flint corn, Sweet corn, Dent corn, Soft corn, Indian puddings (baked and boiled), Indian bread, etc., but some of these are described under their respective names. (See also *Corn Flour, Oswego, Maizena,* etc.)

It is a pretty well-known fact that maize forms the basis of most of the "*Infant Foods*" so much in vogue.

The Peruvian Indians make an intoxicating drink from maize by chewing it and allowing it to ferment, during which process the oil separates and is used as an article of food. This maize liquor seems to be produced in much the same way as the "Kava-Kava" in the Pacific Islands.

Maize Soap is also creating a market for itself. In its preparation, corn oil takes the place of animal oils generally used, and the soap ranks with the olive oil and glycerine types.

Canned Green Corn.—The *sweet* varieties of maize especially furnish very toothsome food when the ears are gathered green, boiled, and the kernels eaten either from the cob or cut off and served with milk. (See p. 177.)

Maine packed corn bears the palm, but western packers often brand their product as that of Maine and imitate the labels. In Maine corn undergoes seven processes in packing—viz., (1) husking, (2) cutting from the cob, (3) silking, (4) mixing (sometimes omitted), (5) cooking at 185 degrees to exhaust cans and filling into cans, (6) capping, (7) processing in steam retorts from fifty-five to sixty-five minutes at 242 to 245° F. As a rule, the corn is not vented after being sealed. When the water bath was used, it was commonly done. In former years it required from four to five and one-half hours in a hot water bath to process corn. It is conceded that corn as packed to-day is incomparably better than that produced twenty years ago, or back to the days of the open water bath. Nearly all the work is now done by machines. The Maine corn packing industry is sixty years old.

There would be less want felt among the poor in this country were the numerous food uses of Indian corn as well understood here as they are in America. (See *Sepawn*, or *Supporne.*)

Many of the preparations above alluded to would be great gifts to the working classes, with whom the great question often is how to get bread.

Maize was only introduced into this country in 1846, the year after the repeal of the Corn Laws, and in consequence of the appearance and rapid spread of the potato disease in 1845, but it has proved itself an invaluable blessing.

The health and vigour of Indian corn-eating people, together with its low price, should help it largely to take the place of wheat bread.

The white sorts are the best for domestic use, and are the only kinds cooked in America. The favourites are *Nonpareil*, a small 8-rowed variety, old-fashioned and rough; *Pearl Corn*, a smooth 16-rowed sort; and the Flint varieties, which contain more oil and gluten than the soft, and have less of starch in them. The yellow kinds, however, contain the most oil, and are best for cattle food, and these ripen ten or fourteen days earlier than the white.

Indian corn is poorer than wheat in flesh-formers, but richer than rice. In 1lb. of the corn there are about 2½ ozs. of gluten, a large proportion of fatty substance, and between 9 and 10 ozs. of starch; the remaining components are water, lignine, gum, sugar, and calcareous ashes (chiefly phosphate of lime). Hence starch is prepared from maize in large quantities. It has long been tried to obtain sugar and syrups from maize, but with only limited success. However, by treatment with acid, maize starch is easily changed into *Glucose* (*Corn Syrup*), and this use has attained a great magnitude, the U.S. exports of glucose now reaching about £2,000,000 a year. (See *Glucose*.)

Maize or **Corn-Bread, Cakes, etc.**—(See also *Canned Corn*.)—Cornbread is an unknown quantity to most Britishers, and to at least half the people of the United States. It must remain unknown, more's the pity, to a good moiety of them, since it is to be had in perfection only by those who can get cornmeal straight from the mill. The meal of the shops, kiln-dried, bolted, and ground entirely too fine, is very much a delusion and a snare.

It should be freshly ground from white, flint-hard maize, known as Little Willis corn, whose particles are round and even as fairy hail, and then it is well worth anybody's while to know what to do with it. Such meal can be bought for 50 or 60 cents. a bushel in almost every town or hamlet along the Ohio River or throughout the Middle South, the Middle West, and Virginia. Natives have a rooted fancy that water-ground meal has a different and more delicate flavour than that from steam mills.

Cornmeal, like loveliness, needs not the foreign aid of ornament, but is, when unadorned, adorned the most. That is to say, the very best sort of cornbread is the "dodger," otherwise "ponebread," and the "hoecake." People who do not know, confound hoecake with *johnnycake*, an abomination made of cornmeal, ryemeal, molasses, eggs and heaven alone knows what.

The best meal in the world will not make good bread if it is mixed too thick and baked too slowly. Further, it must never be put into a cold pan or on a cold griddle. Pans and griddles, however, can be too hot. They should be lightly sprinkled with a pinch of dry meal; if it browns quickly without burning, the heat is just right. Different degrees of heat, in fact, make all the difference in the world in flavour. Cornmeal wet with boiling water has a taste wholly unlike that which is wet with cold.

By Cornbread the South country understands the thing which is, in its own mouth, *Ponebread*, and in the Middle West "*Dodger bread*." It is easy to make, yet not so easy to make exactly right. Mix the sifted meal with cold water to form a softish mass. It must not be soft enough to run, nor stiff enough to hold a spoon upright. Scoop up a palm of it and toss it gently from one hand to the other until it forms a flattish oval. Slap the oval down in one side of your hot pan, and flatten it still more with the fingers. That is the first pone. Set others round about it until your pan is full, then pop it into a hot oven and bake with quick steady heat. Examine it in five minutes; if the crust is cracking over the top, it needs more fire; if it

is blistering, it needs less. If by good chance you strike the lucky medium, in twenty minutes you will have "*Corn-pones*" fit for a king. When done the crust should be thin, brown, of a rich nutty flavour, and separating readily from the inner mass. If you want to serve the pones after black mammy's fashion, break—do not cut them—open lengthwise, lay a lump of the very best butter between the halves, put them together, and stand in the hot oven a minute before sending to table.

Hoecake is mixed in the same way, only a little softer, dabbled in round parts on a hot griddle, flattened to less than an inch, baked on one side, then flipped over and finished.

Fatty bread is made up with hot water, a very little salt, and baked in small pones.

Pumpkin and sweet potato bread are but fatty bread, a little more salted, and mixed with its own bulk of stewed pumpkin, or boiled and mashed potatoes, before the baking.

There are nearly as many sorts of *Egg bread*, *Corn muffins*, *Gems*, and Batter cakes as there are housekeepers south of Mason and Dixon's line. One of the best and most wholesome is *Mush bread*. To make it take a quart of fairly thick cold mush, stir into it three well-beaten eggs, whites and yolks, together, a pinch of salt, half a cup of melted lard, and half a cup of rich sweet milk. Beat hard for ten minutes, then pour into a greasy pan and bake in a very hot oven. By adding a full cup of milk and a half pint of sifted flour you have a very excellent muffin batter, to be baked either in rings or gem pans. A cup of hot water or an extra cup of milk gives very fine batter cakes. But to serve with breakfast along with fresh sausage, fried chicken, or crisp fried creek trout, scalded batter cakes are the things. To make them, pour a pint and a half of full boiling water upon a pint of sifted meal, stirring all the time and adding the water so gradually that there shall be no lumps. Stir until the mixture is cold; it should be a thin, creamy batter, running freely from the spoon. Heat a well-greased griddle very hot, drop the batter on it in moderate spoonfuls. In a minute they will have set, and must then be lightly turned. Pile them delicately one on the other and send to table smoking-hot.

Maize Oil.— (See also *Corn Oil*, p. 300.)—Until recently this was a mere bye-product in the manufacture of glucose and starch from maize, and was wasted, but is now rapidly becoming a staple article of commerce. When refined it proves a superior table oil, quite equal to the general run of so-called olive oils, while the crude product is finding its place in the paint, oil, and drug trade.

Maizena Wafers.—Oval shaped biscuits with finely gimped edging, about 3¼ inches long, 1 inch wide, and ¼ inch in thickness, about 100 to the lb. Rich, light, and sweet, exactly resembling Oswego biscuits, and in taste not unlike Marie, Osborne, and Arrowroot biscuits.

Majoon or Majun.—A substance obtained in India from the hemp plant, and employed in preparing the intoxicating beverage known as *Hashish*, as well as a variety of sweetmeats. (See also *Bhang*.)

Malabar Pepper. — (See *Cardamoms*.)

Malaga Raisins. — (See also *Raisins*.)—There are three kinds of raisins exported from Malaga (a seaport in the south of Spain), viz., Muscatels (*La Moscatel*), Bloom (*La Flor*), Sun Raisins (*El Sol*). They are of blue colour and large size, and are generally used as dessert raisins. There is also another variety called Pasas de Legia. (See *Lexias*.)

The annual crop of Malaga Raisins has varied from 800,000 to 2,000,000 boxes a year.

Malaga has now, however, to contend with powerful and somewhat unfair competition from Denta, where of late years the Malaga style of packing has been introduced and

the product often sold as genuine Malaga. Many of the so-called *Malaga Grapes* even, imported into this country do not come from there at all, but from Albacete. The genuine Malaga grapes are all converted into raisins, as above, and made up in boxes of 22 to 25lbs. each. California has also become a powerful competitor against Malaga in the size, bouquet, and flavour of its raisins, and many Californian vines have been replanted in Spain in districts ravaged by the phylloxera. Australia, on her irrigation lands, is also doing wonders with muscatels, but perhaps the very choicest dessert raisin is the Chilian, which is scarcely known in England.

The process adopted in Malaga for converting grapes into raisins is very simple. When they are quite ripe they are picked in bunches with their stems on complete, and then either hung up or laid upon wooden frames to dry, planting at an elevation of about 45° towards the west, or on sandy ground sloping so that the afternoon sun can be utilised. Coarse cloth is used to cover them at night so as to keep off the dew. They are then turned over from time to time until at the end of two or three weeks they become raisins or muscatels, some being left on the stems and others being picked off and packed loose. Sometimes the bunches of grapes are turned towards the sun to ripen while hanging on the vines. There being no rain there in summer this method of drying the grapes is an advantage other countries do not possess, and owing to this Malaga raisins are more esteemed than those of Valencia.

The vines are usually planted 8 feet apart, and are never trailed, but are permitted to grow as bushes, about 4 feet high, and no grass is allowed to grow among them.

A notable muscatel grape vine, flourishing in the annex to a large coffee house at Malaga, is over 130 years old. Its trunk is a foot in diameter, its luscious fruit hanging in large bunches on trellis work over the heads of customers while they sip their wines and ice-cream in the cool of the evening.

Malaga or **Mountain Wine.**—There are two varieties, sweet and dry, produced chiefly at Axarquia, in Granada. Of the sweet variety there are four kinds:—

1. The common Malaga, known and exported under that name. It is made from white grapes, and contains a certain proportion of boiled wine, which is allowed to burn, and communicate a slightly burnt taste to the Malaga. It is very rich, luscious, and full of body, and every pipe is said to contain about eleven gallons of brandy.

2. *Mountain Malaga* is also made from the same kind of white grapes, and, like the common Malaga, contains colouring matter and brandy; the only difference being that riper grapes are used.

3. *Lagrimas*, which is the richest and finest of Malaga sweet wines. Its name almost explains the manner in which it is made, it being the droppings (or "tears") of the ripe grapes hung up, and without pressure.

4. *Dry Malaga* is also obtained from the same grape as the *sweet*, but pressed when greener, and in this wine there is one-eighth part more of brandy than in the sweet kinds—no less than one-twelfth part of *dry Malaga* being brandy.

Malaga wines, however, seem to be less drunk in England at the present day than they were a century ago, although many are brought to Santa Maria, Cadiz, and shipped from there under the name of *sherry*.

Malaga Xeres is known in England as pale gold dry sherry, of which the fine old *Amoroso* is an excellent example.

Malaguetta Pepper.—(See *Amomi Seed*, *Grains of Paradise*, etc.)

Malay or **Bencoolen Tea.**—A beverage prepared from *Eugenia variabilis*,, and used as a drink by the Malays.

Malic Acid.—F. *Acide Malique.* The acid of apples and certain other

sour fruits, such as pears, plums, cherries, currants, gooseberries, etc. It is this acid which gives the fruits their sharp taste and their flavour. In chemistry is is represented by $C_4H_6O_5$.

Malmsey or Malmesyne. — Da. and Ger. *Malvaisier;* Du. *Malveziewyn;* F. *Malvoisie;* It. *Malvagia;* Port. and Sp. *Malvasia.*

Malmsey wine is made in Greece, the Canaries, and Madeira, from Muscatel grapes. The name is a corruption of Malvasia, so named from Napoli di Malvasia, in the Morea, where it is made.

Probably modern Marsala closely resembles the old wine. It is in the old song of "Simon the Cellarman" spelt *Malvoisie.*

Genuine *Malmsey* is a strong, luscious and fine-flavoured sweet wine, made from grapes in the last stage of ripeness, and which have been allowed to shrivel on the vine. It is of a deep golden hue and rather heady, containing 16 to 17 per cent. of alcohol, and is produced in the Azores, Sardinia, Sicily, and one or two other places as above. Exported from Napoli di Malvasia, in the Morea, the home of the Malmsey grape.

Several sorts of sweet Spanish wines also are now denominated *Malmseys,* or *Malmsey Madeira.*

Maloo Mixture.—(See also *Exhausted Teas, Macao Teas, Tea Substitutes,* etc.)—A notorious kind of rubbishy tea, principally composed of "spent" tea-leaves, filth, and dirt, artificially coloured with minerals, and shipped to this country from Shanghai.

The fraud was discovered and exposed by Dr. Lethby in 1871, when several thousand chests of the stuff were condemned or confiscated and destroyed.

Malt.—Partially fermented barley, the starch being converted into grape sugar. The term is applied to designate any grain which, being steeped in water, is made to swell out and germinate to a certain extent, after which the process is checked by the application of heat—*i.e.,* first it is air-dried and afterwards stoved at a heat varying from 90° to 165° according to the required colour. At the lower heat it is *pale malt,* at a higher heat *amber,* and afterwards *pale brown* malt. It is then ground or smashed. This process transforms the starch into sugar, and it is this saccharine principle of the grain which is the essence of malt. Rice and almost every species of grain has been used in malting, but in Europe, and especially in England, malt is almost entirely prepared from barley. It is the principal ingredient in the manufacture of beer, and is little used except in brewing and the distillation of spirits.

The best barley malt is that which is evenly and well grown, with the acrospire at least three quarters of the way up the back of the grain.

Grain which is unmalted is sometimes mixed with malt, but if a handful of mixed grains be thrown into water the unprepared portion sinks to the bottom, while malt floats, or sinks very slightly.

Malt Bread (Aerated). — This excellent tonic and mildly laxative bread is said to be made as follows:—

Mix 8lbs. granulated wheat meal, 3 ozs. cream of tartar, and 2 ozs. carbonate of soda, and sift well three times over. Then make a bay in the centre and add 8 ozs. ordinary malt extract, 1¾ ozs. salt, and ½ gallon fresh buttermilk—first dissolving the salt and the malt extract in the buttermilk, and form the whole into dough. Weigh off at 1¾lbs., mould them oval, and place into dusted oval tins; then turn them on to a large tin sheet and bake in a sound oven.

Malt Coffee. —Made from malt which is first soaked in cold water and then warmed in a coffee roaster until the grains assume a glossy-brown colour. Barley, for instance, undergoing the process of malting and ready for the kiln is placed in an ordinary cylindrical coffee roasting apparatus where it is well turned and agitated while the roasting is carried on. A

little salad oil or some aromatic or flavouring matter is added to prevent the malt from burning, and the roasting is then continued until the malt assumes the colour of roasted coffee berries. It is then removed and blended with coffee in the proportion of 1 part malt and 2 parts coffee, and the mixture is next ground in a coffee mill. It is said to suit some constitutions which cannot take coffee and chicory.

For the Laws and Regulations about Malt Coffee, etc., see *Imitation Coffees.*

Malt Extracts.—Extract of malt is now used in almost every household, and many British brands are on the market. A considerable quantity of malt extract is, however, imported from America and Germany. Some of the *malt extracts* are, however, absolutely devoid of their chief virtue, *diastasic power*, through having been overheated, and these will even keep good to all appearances and remain mobile much longer than those of the full diastasic strength, for the latter are apt to become granulated and solid in a few weeks.

As the value of malt extract depends chiefly on the amount of diastase it contains, it should be often tested. This is easily done. Take 10 grains of potato starch, or arrowroot, and boil in 2 ozs. of water for three minutes, cool to 110° F., and add 10 grains of the extract to be tested dissolved in a little water. Keep the solution at 110° F., until small quantities (about 30 minims), taken out at intervals of 1 minute, cease to give a blue colour with 1 drop tincture of iodine. A good extract should not take longer than five or six minutes.

Hoff's malt, and Trommer's malt, combined with cod liver oil, quinine, cascara, etc., find a large market in this country. A good deal of "maltine" for the preparation of malt extracts in England has been imported in barrels for many years. The Customs charge duty on the alcohol contained in malt preparations.

Special Firm.—M. E. Houldsworth, 3 Norfolk Street, Bradford.

Malt Sugar.—This is usually an extract from common barley. The grain contains so large a proportion of saccharine matter that in the process of malting the sugar is produced, and forms a very important ingredient in the manufacture of ales, porter, and stout.

Malt Vinegar.—G. *Malz-Getreide, Bieressig.* (Also known as *Ale aliger*, or *Alicar.*)

This is the chief kind of vinegar now used in this country, and with the exception of wine vinegar, seems to be the only kind which is allowed to be supplied when "Vinegar" is asked for. If any other kind be supplied, its nature must be specially declared, or the vendor is, according to some magistrates, liable to fine; but magisterial decisions on this point vary very much.

Malt vinegar is, as its name implies, derived from fermentations of mixtures of malt, barley, or other cereals, damaged cargoes of maize, rice, and other material being largely used, the alcoholic fermentation being much the same as for ordinary brewing, and preceding the acetous. Each firm has of course its own particular system, but the following will afford a general idea of malt vinegar manufacturing:—

The malt, after being ground, is placed in the mashing tuns (huge tubs fitted with perforated false bottoms and stirring apparatus), and the water (termed in brewing phraseology "liquor"), which has previously been heated by steam to the correct temperature, is now run on the malt, the tuns are covered and allowed to stand for a couple of hours, and it is during this period that the diastase (a peculiar ferment formed during the previous malting of the barley) acts on the starch contained in the malt converting it into grape sugar. The malt liquor is then run off into the fermenting piece; and on to the malt a second and third lot of liquor is now run, which, after being concentrated, is added to the first lot in the fermenting piece. A proportion

of brewers' yeast being added, and the room kept at a suitable temperature, fermentation rapidly ensues; the grape sugar being converted into alcohol. As soon as the fermentation is completed, the wash is drawn off into settling tanks, where it is clarified. It is then run into the acetifiers, large casks filled with beech shavings over which the wash is made to pass time after time, a current of air passing through the whole, until the alcohol in the wash has been oxidised into vinegar. The vinegar is then pumped into a large vat, and, after being clarified, is pumped into the store vats, from whence it is drawn off into casks as required for sale.

It will be noticed the acetification is effected in much the same way as that adopted in producing wine vinegar; and in order to accelerate the process, "rape," that is the residuary fruit used in making British wines, or the green twigs and cuttings of vines are by some firms introduced into the tubs to act as a kind of ferment. It has been ascertained that several secondary fermentations take place which are material to the character of the product, for the higher alcohols which are formed are, in the acetification process, oxidised into the corresponding acids, or are etherified, and it is these products which give flavour to malt vinegar.

Malt vinegar is usually of a brown colour, and possesses an agreeable and refreshing aroma, which is attributed to the acetic ether, sugar, gums, salts, etc., derived from the malt. It contains nitrogenous matter, phosphates, preservatives, and micro-organisms such as yeast cells. The last show its origin. It is made of several strengths—from 3 to 5 per cent.; it has a specific gravity of 1·017 to 1·019, and a characteristic flavour. The adulterants to guard against are water, sulphuric acid, pyroligneous (wood) acid, gypsum, and burnt sugar colouring—all easy of detection except the water, and anything below 1·014 sp. gr. points to watering.

To detect sulphuric acid, concentrate a pint of the vinegar to half its bulk by evaporation in a warm place; saturate a piece of white loaf-sugar with the vinegar, and stand it in a hot place. Should the sugar turn brown or black, free sulphuric acid is present. Another test is to mix a small quantity of the suspected vinegar with some powdered starch, boil it for half an hour, then allow it to become entirely cold, and add a few drops of iodine solution. If the vinegar is unadulterated it will be now coloured blue; but if sulphuric acid be present it will prevent this blue colour. (See "*Vinegar.*") For many years vinegar brewed from malt, raw grain, glucose, and sugar has been allowed to pass, and has been certified as pure malt vinegar, by numerous analysts in all parts of the kingdom, but during the last two years there has been considerable dissension regarding these matters, and no definite standard is yet fixed.

Special Firm.—Allen Jeeves and Sons, Seddington, Sandy, Beds.

Malted Foods.—(See also *Prepared Foods.*)—Malt would seem to have become a boon and a blessing not to babes alone but to speculators as well.

Besides Malt Bread, Malt Coffee, and Malt Sugar, there are various other preparations designated as *Malted Cocoa*, *Malted Marmalades*, *Malted Preserves*, *Malted Jellies*, etc., which according to the manufacturers are specially adapted to dyspeptic persons, but the food materials appear to be merely mixed with an extract of malted barley, wheat, or other grain, prepared preferably *in vacuo*, and a small quantity of gelatine, with the desired flavouring or colouring added to the finished product.

The following makes a very good malted food. Baked wheat flour, 5 parts; Ground malt, 1 part; Sugar of milk, 2 parts. Dry the ingredients slowly before mixing; fresh milk should be added before serving.

Note.—If good active malt is added to the biscuit flour, etc., the whole of the starch will become soluble in a very short time when the milk or water

is added to it, provided the temperature is not too high; it should not exceed 140° F. or the diastic power will be destroyed. It is preferable to add the malt after the other ingredients have been cooked.

Gardner's patent "Rapid" Sifter and Mixer, freely used for above. Prices from 50s. to £100. Catalogues from Wm. Gardner and Sons, engineers, Gloucester.

Maluku Seeds.—The fruit of a West African shrubby plant, *Polygala rarifolia*, grown about Sierra Leone and Angola. The seeds contain a high percentage of oil, and were first received at Liverpool in 1884.

Malvasia or **Malvoisie Wines.**—Sometimes called *Vino Santo* or *Holy Wine*. This was originally a name for the wine of Napoli di Malvasia, in the Morea, Greece, but is now applied to some other growths, and particularly to one of the best white wines of Italy.

Some are also made in the Valais, Switzerland, and in Granada, Spain. They usually contain but very little alcohol and are not very durable.

Mamaliga.—A food or grout made by the lower classes in the Danubian Provinces from ground maize or Indian corn.

It is prepared similar to hasty pudding or oatmeal porridge, and forms their chief sustenance.

Mammee.—A tropical fruit, the *Mammea Americana*, which has a sweet and very agreeable taste, accompanied with a pleasant aromatic odour.

Mamons.—A pleasant acid fruit common in the island of Curacao in the Carribbean Sea.

Mandarin or **Narchey Oranges**—The fragrant little *Mandarin*, also known as the *Clove*, or *Noble* orange, is quite small and flat, but possesses a delicious flavour when ripe; it has generally more width than length, and a very thin and tender rind which separates very easily from the pulp.

The mandarin is flatter, sweeter, darker in colour, and a trifle larger than the tangerine.

Although a native of China, it is now grown extensively in Malta, Valencia, and around Nervi, in Italy, also in Algeria, Cape Colony, Brazil, and several other countries.

Mandarins usually come in small boxes of 25, 50, or 72, about December. Each fruit is generally wrapped in tin foil, or fancy papers, so that when the lid of the box is removed, the contents have a very pretty appearance. Unfortunately they are gathered before ripe, and therefore lack the finest flavour, but are always noticeable for their sweet perfume.

Mandioca or **Manioca.**— Brazilian names for the Manihot plant; of which there are two species, viz., the bitter *M. utilissima*, or *Jatropha Manihot*, and the sweet, *M'aipi*, which flourish throughout Central and South America and Africa. In the West Indies this scrubby plant is known as the *Cassava* (see p. 190); in Peru and other parts of America as *Jucca* or *Yucca*.

It grows six to ten feet high with crooked and brittle branches, large palm-like leaves, and green flowers. It is rather difficult to cultivate, and its roots or tubers require twelve or eighteen months to ripen. These roots or tubers are very like to those of the long parsnip, of large size, and fibrous texture, often 30 to 40lbs. in weight, and from these are prepared foods known as Farina, Brazilian Arrowroot, Cassareep, Onycou, Piwarree, and Tapioca.

The raw roots or tubers, as well as the leaves and stems of the bitter varieties, when in a fresh state, contain a deadly poison known as hydrocyanic acid, but this deleterious property is got rid of by peeling and washing the roots and exposure to the air, and by heat and pressure of the grated root in rush sacks, the solidified mass being subsequently beaten fine in mortars and dried into a beautiful white but rather coarse grained meal, from which is prepared "*Couaque*" or *Cassava cakes*, the native bread of millions of human beings.

Mandioca meal is a poor weak substitute for wheaten bread; it is deficient in gluten, and therefore cannot be formed into a leavened mass or loaf, but has to be roasted in hard grains if wanted to keep long. Cakes are made of the half-roasted meal, but they go sour in a few hours. (See also *Cassareep*.)

In one form or another this manioc food is found on every Brazilian table, and forms a great variety of healthy and palatable dishes.

In Africa the natives occasionally eat the Sweet Mandioca (*Manihot aipi* or *aypi*) roasted; this species contains no poisonous principle, nor does it really require soaking; but the dry flour, called *bobo*, is always made in the same way:—The roots are soaked for three days, peeled, and sun or fire-dried whole; next pounded and ground on a stone as wanted for use, and finally made into dough or unleavened bread.

The fine substance deposited by the juice of the roots when preserved, and after standing a short time, constitutes the Tapioca of commerce, and the powder, "Brazilian Arrowroot."

Mandubi Nuts. — A Portuguese name for *Arachide* or *Ground Nuts* in Brazil.

Mangel Wurzel or **Field Beet.** —F. *Betterave;* It. *Biettola;* Port. and Sp. *Remolach.*

A large but coarse variety of the common beetroot, cultivated mostly for cattle food. In colour it is partly red and partly white, and sometimes greenish. In form it is generally carrot-shaped, but sometimes globular.

Mangels are of nearly equal feeding value to swede turnips, yield heavier crops, and are not liable to the "lop" or turnip beetle. They also suit hot and dry conditions where turnips will not flourish, as on the light soils of our southern counties.

In warm soils they are calculated to be about 50° more productive, and to bear a droughty summer better than turnips. They are cultivated much the same as turnips—sown, thinned, and stored before November; but if fed to cattle before spring are liable to cause "scouring."

In hoeing and thinning, great care is necessary not to cut or scratch the plants, or they will bleed severely, and be spoilt. Mangels are not fit for use as food for animals until the spring, because they are really unripe, and have not developed their valuable properties.

Mangoes.—Ind. *Amra.* (See also *Chutneys.*)

The word mango is from *mangga* the Malay name for the "mang" tree or *Mangifera indica*, of which there are a great many varieties, differing in the shape, size, and flavour of the fruit.

MANGO.

The trees usually grow 40 to 50 feet high in the East and West Indies, something like chestnut or orange trees, and are cultivated in most hot climates. The fruits (*mangoes*) are mostly of pear or kidney shape, orange coloured, and almost covered with small black spots when ripe, and varying in size from a hen's egg to that of a goose, but others are round heart-shaped, flat, etc., and of various

shades of yellow, green, and crimson. Each fruit contains a curious large flat stone, with a nutritious kernel inside.

Wild mangoes are usually fibry and inferior, with a flavour of turpentine; but the best are very luscious, pulpy, and cut like apples. No fruit possesses so wide a range from absolute vileness to the most delicious lusciousness. Some varieties are hardly fit for pigs, while others are fit for queens.

The *Mangue Auguste* and *Mangue Geneve*, as grown in Réunion and Mauritius, are specially fine. They are also slightly acid, with the flavour of apricot and pineapple combined, and are highly prized as dessert fruit. In the Jamaica markets and elsewhere there are two very popular sorts of mangoes, known as "No. 11" and "No. 132." The tradition is that a French ship coming from East Indies, and containing a large collection of plants for the botanic garden at Martinique or Guadaloupe, was captured by Lord Rodney and taken into Jamaica. Mangoes formed a part of the collection, and the numbers 11 and 132 were those which these two varieties of the fruit bore in the list.

The unripe fruits are much used in India. They are gathered green for tarts, jellies, preserves, etc.; also for pickling, in which latter state they are largely exported to England and other countries.

They are now being extensively grown in Queensland, and shipped fresh from Townsville.

They bear transit very well if kept at a temperature of about 45° F. In Madeira the mango varies greatly in size and quality, the bulk of the fruit being but little larger than the largest plums grown in England.

The mango is very suitable for exportation, as it can be gathered in a fairly green condition and allowed to mature. It is usually packed in baskets, each fruit being wrapped in paper, and also separated from the adjoining fruit by straw, the basket being covered with coarse canvas. Mangoes are the one fruit in which the natives of India and Ceylon take a real interest.

In India they are always plucked when still under-ripe (sour and hard), and afterwards completely ripened in straw. When over-ripe they lose much of their best flavour.

The "Bombay mango" is one of the best varieties, the "Takàri" of Puttehgarh, the "Singra" of Benares, etc., but exquisite varieties are also grown in Bengal, Madras, and North West Provinces.

Small green lemons are often pickled in imitation of mangoes.

Mango Chutneys. — (See also *Chutneys.*)—There are three recognised classes of these popular Indian condiments, all made of *sliced* mangoes, fruits of the *Mangifera indica*, gathered and pickled before being ripe, viz., *Green Mango Chutney*, sour and hot, consisting of the young mangoes; *Sweet Mango Chutney*, moderately hot, but sweet; and *Sweet Sliced Mango Chutney*, composed of larger slices; very sweet and hot.

Lady Brassey, in her *Voyage of the Sunbeam*, says, "The mango is certainly the king of fruits. Its flavour is a combination of apricot and pineapple." The fruit itself is a fleshy drupe, fibrous within and with more or less of turpentine flavour. It is eaten ripe in India.

Mango Ginger.—The root of the *Curcuma amada*, one of the several varieties of *Zingiber*. It is a native of Bengal, and called in the vernacular "*Amada*." It is used in the same way as ordinary ginger, but very inferior to it.

Amboosee is an Indian name for dried mangoes.

Mangosteen.—F. *Mangoustan.*

An extremely delicious and wholesome orange-shaped fruit, with a thick dark-brown rind slightly spotted with white, and with rose-coloured pulp. This pulp is sweet, soft, and juicy, and has a cooling acid flavour.

The tree grows about 20 feet high in Malacca, Ceylon, and the East Indies, also on the lower Nilgiri hills.

Several attempts have been made to preserve this fruit for shipment to Europe, but the jam was flavourless and insipid.

Maguey. —See *Pulque.*

Manihot.—See *Jatropha Manihot.*

Manjak. —A bituminous substance or species of asphalt exported from the island of Barbadoes to the extent of about 2,000 tons a year. It is also found in Trinidad.

The less valuable kinds are used for insulating purposes, but the superior qualities are chiefly used for varnish.

Manila Nuts.—(See *Ground Nuts.*)

Manila Tobacco is highly prized, and has a fine appearance, classed by some as equal to Cuban, and by a few as its superior. It is stronger than it looks, and has a fine herby flavour. (See *Cigars.*) It is grown over Luzon and the neighbouring islands, but the very finest comes from the two large provinces of Cagayan and Isabela, in the extreme north-eastern part of the island.

There the land suitable for it is now all occupied. The cultivation requires little labour. The man of the household usually performs the tillage and the women and children the rest of the work.

Rather less than half the crop is sent out in the leaf, and this goes largely to Europe; the remainder is made into cigars and cigarettes, two-thirds of which are consumed at home and the rest exported.

In 1893 about 11,000 tons of leaf were exported, and nearly 140 million cigars and cheroots.

Manioc. —See *Mandioca.*

Manna. —F. *Manne.*

The "manna" of modern commerce is a sweet, juicy substance, which first exudes like gum from the trunks and branches of certain varieties of ash trees in Sicily, where the manna ash (*Flaxinus ornus*) is specially cultivated in plantations, and the substance is used as sugar or syrup. It is detached from the tree with knives about July, and afterwards dried.

In Kurdistan, Lebanon, and elsewhere, it is found on the leaves of various plants, as the dwarf oak, tamarisk, and is shaken from them before sunrise into cloths spread underneath. *Briancon Manna* is obtained from the same tree as Venice turpentine, viz., *Larix Europæa.*

It is met with in the markets often in oblong flakes 3 to 6 inches long, called *flake manna*, of a whitish-brown colour, or in granular form, light, friable, and almost transparent, not unlike coriander seed.

It has a sweetish-bitter, honeylike taste, is slightly laxative, and is mostly used in conjunction with drugs or farinaceous substances, especially for children.

The *manna* of the Israelites is supposed to have been a similar product—either of the camel thorn, or a species of tamarisk shrub, *Tamarix gallica mannifera*, from the branches of which a gummy sugar drops to the ground, consequent upon punctures by the insect "*Coccus manniparus.*" But there are many sweet, gummy "mannas" yielded by various species of *Alhagi*, spiny shrubs grown in Arabia and Persia, and it is very doubtful which was the true manna.

In the French desert there is a thallophite, the *canona esculenta*, or lichen esculentus, and it appears that this kind is still used by the Arabs who traverse the arid sands of Arabia or Africa either as food for their camels or themselves. This mushroom growth is very common, and is found upon the sands after rain. It is a greyish cryptogam, little larger than a pea, with a mealy fracture, and is sometimes found in agglomerated masses of great size. It has an agreeable taste, being somewhat sweetish. Its actual composition is water 16 per cent., nitrogenous matter 14, non-nitrogenous 29, mineral 5, starchy 32, and fatty 4 per cent.

Although it can scarcely be called a complete aliment or food, still it is capable of sustaining for some time men and beasts who may happen to

be deprived of other means of sustenance.

Edible lichens have often been made into bread and used as food in Asia Minor, Algiers, and elsewhere, when no other food was to be obtained. The *honey-dew*, which is noticeable on many plants and leaves in this country, is of the same nature as "manna."

A sort of Manna has also been found on a blue grass in Queensland. It appears on the nodes of the stems in masses as large as marbles. It is sweet, and nearly three parts of it consists of mannite, which, though sweet, is not sugar. It also contains a ferment which has the power to decompose cane sugar without evolving carbonic acid or any kind of gas. The grass is not only indigenous in Australia, but it is found also in tropical Asia and Africa.

A factitious "manna," made of a mixture of sugar, starch, and honey, with a small quantity of scammony (to give it colour and flavour and to render it purgative), is often offered for sale.

Manna Croup. — A Russian farinaceous food, prepared in a granular form from the "groats" or partly crushed grains of *Glyceria fluitans*, deprived of their bran, and similar to *Semolina*.

It is imported in small quantities from Poland or Russia; and in England its use is mostly confined to invalids and children.

Manures. —See *Fertilisers*.

Manzanilla or **Manganilla.** — A superior brand of new sherry, remarkably dry, and a delicate tonic, produced between San Lucar de Barrameda and Jerez de la Frontera, in Spain. Its name is the Spanish word for *camomile*, the flavour of which it possesses. Colour, light straw. This wine is the purest made; any admixture would spoil it.

Maple Honey.— This is obtained from maple syrup in the same way as maple sugar, but is very liable to ferment.

Maple Sugar. — F. *Le sucre d'érable.*

Produced mostly in North America by the evaporation of the spring sap of the sugar-maple tree, *Acer saccharinum*, and allied species, which grow abundantly and rapidly in the forests from Canada to Pennsylvania.

The juice is boiled down first to a thick syrup (see *Maple Syrup*), then clarified and drained, but being uncrystallisable it is merely formed into blocks and marketed without any further refining. The sugar is of the same kind as that produced from the sugar cane, but, although very sweet, it possesses other flavours besides those due to the sugar, and is mostly confined to domestic uses.

The price of maple sugar is, however, beyond all proportion to the amount of saccharine matter which it contains, and the great quantity offered for sale in comparison to the very limited supply has aroused popular suspicion that it is adulterated with cheaper substances.

The trees, often 60 to 80 feet high, require 20 years' growth before they can be tapped. They are tapped each spring, when the sap is ascending, viz., March to May, and in each tree are generally made, on the south side, two holes ¼ or ½ inch deep with a gouge, so as not to injure the wood, and about 20 inches from the ground. Small taps, reeds, or spouts of elder wood or sumach, about a foot long, are inserted, and each tree then produces 4 to 6 gallons a day of juice, which yield 8 to 16 ozs. of sugar. Buckets are fixed for the sap to run into, or sometimes the spouts are arranged to empty into a central trough, whence it flows into a large receiver. Sometimes when the trees have been tapped ice forms in the buckets, and the sap comes very grudgingly. When, however, the warm weather sets in, the "sap" runs readily, and in a few hours the buckets will be running over with syrup. From a number of 1,000 trees, from 50 to 75 barrels of sap per day for four or five consecutive days have been taken, not counting a very large

amount of waste. Thorough cleanliness, dry wood, an evaporator of large capacity, a good flannel strainer, and a sugar thermometer, are considered necessities in the production of the finest syrup; even then, however, the condition of the weather will materially affect the product. The juice of old trees yields twice as much sugar as that of young trees, and the higher from the ground the richer is the juice obtained. As above stated, this sap or juice is afterwards boiled down to the crystallising point, and then poured into moulds to solidify.

In this way 3,000 to 5,000lbs. of sugar are sometimes made during the season of about six weeks by single parties of two or three men, who have taken up their quarters in the forests, and supplied themselves with the necessary plant and provisions.

Out of the 32 million pounds of maple sugar produced in the United States in 1893, over 14 million pounds of it was from the State of Vermont. It has long been quite a favourite condiment, both in America and Canada.

The dark brown or honey-coloured is generally preferred for ordinary uses.

As with almost every other food product, maple sugar is basely counterfeited, and it is averred that more Vermont maple sugar is made every year in Davonport, Iowa, from cheap yellow sugar flavoured with vegetable extracts than can be produced from all the maple trees in the whole State of Vermont! Dr. Wiley, Chemist of the Department of Agriculture, recently stated that there was ten times more sold than produced.

The atmospheric changes have great effect upon the yield, a cold and dry winter being more favourable than a moist one, and trees growing in a damp situation, although producing more sap, will not yield so much sugar as those in a more elevated and drier soil.

Canada's National Hymn, "The Maple Leaf for Ever," bears witness to the popularity of the maple there. Rather primitive methods are still employed in the manufacture of the Canadian syrup and sugar, and the black-looking cakes, about the size of ordinary bricks, are hard as flint, but the quality is much stronger than the Vermont article. The 1lb. bricks sell wholesale at about 3½d. per lb.

Old sugar is often reboiled with a proportion of new sap to give it a fresh flavour, but the chief adulterant is common brown sugar.

Maple Syrup. — A delicate and agreeable flavoured syrup produced in the United States and Canada from maple sap, or the sap of the American sugar-maple tree (see *Maple Sugar*), and by some considered superior in flavour to the syrup obtained from the sugar cane.

It is prepared in two ways—either by simply evaporating the crude sap of the maple tree or by dissolving maple sugar; say 4lbs. sugar in a quart of water; some add a little gum solution to produce a rich froth. Throughout the United States it is commonly sold in tin cans, the chief States of production being Maine, New Hampshire, Vermont, New York, Pennsylvania, and Ohio. Vermont probably yields more than all the others combined.

The most popular brands are the "Log Cabin," "Buckeye Maple" (Ohio), and "Green Mountain Maple" (Vermont). Wholesale price, 2/6 to 2/9 a gallon.

In Canada the maple harvest varies in length from 10 days to three weeks, and occurs between March 10 and April 20. It is a period of exceptional activity, and every available member of the family is pressed into service, district schools being closed. Sugar "bushes" contain from 400 to 5,000 trees. Five thousand are rare, 2,000 not uncommon; but the average "bush" contains from 1,000 to 1,500 trees, which yield from 1 to 4 pounds of sugar per tree during the season. Two and one-half pounds are considered an average yield, 3 pounds good, and 4 pounds per tree exceptional. Almost every farmer in Eastern Quebec is a sugar manufac-

turer to the extent of from 500 to 15,000 pounds a year.

There are no available data from which to make anything like an accurate estimate of the maple-sugar production of Canada, but it is of considerable importance. It is, of course, well-known that a great portion of the maple sap is never reduced to sugar, but is finished as syrup; yet the yield is always estimated in pounds of sugar, a gallon of syrup being equivalent to 7 pounds of sugar.

The "tapping" of 2,000 or 3,000 trees, the insertion of spouts, and the hanging of sap buckets is very quickly accomplished by the experienced sugar-makers, one man tapping from 500 to 600 trees a day. The gathering of the sap is a much more serious matter. When the "run" is on, each tree has to be visited twice a day and the buckets emptied, their contents being received by a huge barrel drawn on a sled, hauled to the sugar camp, and transferred to a large tank, from which the sap is drawn off into the evaporator. From this it emerges as syrup; and, if sugar be desired, it is passed into another pan where the "sugaring off" is completed.

By a system of cross sections in the evaporating pan, with apertures alternating at either end, the sap is forced slowly along a zig-zag course down the whole length of the pan from the receiving compartment, where it is thoroughly strained, to the finishing compartment, whence it is drawn off through a faucet. When the sap boils too furiously, a few drops of milk act like magic in subduing it. The skilled sugar-maker can easily tell the proper consistency for syrup or sugar, but this is more accurately gauged by an hydrometer, which indicates the specific gravity of the liquid. The sugar moulds for 1½lb. cakes consist of a few parallel wooden bars connected by movable transverse iron sections, from which the cakes may easily be removed.

Adulteration and imitation are, however, carried on afterwards to such an extent that the mere name "Maple Syrup" has in America become synonymous with *glucose* and other cheap fabrications. Short measure cans and rubbishy imitations, all represented to be "pure," fill the markets to such an extent that a natural prejudice has arisen, which causes many to abstain entirely from the use of it.

New syrup is better and finer flavoured than old; sometimes the old is mixed with the new, but it may be easily known from the darker colour of the old.

In the maple groves, climatic conditions are said not only to affect the flow of sap, but the delicacy of its flavour. Dark gloomy weather is apt to impart an undesirable taste to the sugar or sap, besides curtailing the flow. Cold raw weather is also highly unfavourable to the manufacture, but snow, or clear, bright days with frosty nights, always promise a good flow of sap untainted by any objectionable flavour.

Maqui Berries.—The fruit of a small wild evergreen tree or shrub (*Aristotelea macqui*) very common in South America, particularly in Chili along the course of torrents and in shady mountainous woods. The maqui tree belongs to the linden order (*Tiliaceæ*), which abounds in species.

In Chili these sharp acid berries, in shape and size like cherries, are eaten either fresh or preserved in different ways. Mixed with grapes, a wine is also made from them. The shrub varies with either dark purple or greenish red berries, the latter being preferred. They have latterly been extensively exported to Europe in a dried state for the purpose of colouring wines, and in France are eagerly sought after.

The stem of the plant is utilised by the Chilians for making ribbons, and bands for agricultural purposes.

Maracaibo Coffees.—A name for coffee grown in Venezuela, at the north of Brazil, and shipped at the port of Maracaibo. This export is about 25,000 tons yearly. The new crops reach London in July.

Maraschino (pr. *kee'no*).—Sometimes spelt by mistake Maraskino, or Marasquino.—(F. *Marasquin.*)

A popular bitter-sweet liqueur, from the black, small, and delicately-flavoured wild cherry, peculiar in some places of Dalmatia, known as the Marasques, or really "Amarasca cherry."

The kernels are divided from the fruit, and distilled with the leaves of the Amarasca tree, which gives the bitter aroma to the liqueur.

The juice is then distilled and redistilled, and afterwards rectified. Only finest sugar is used. Never honey.

It has afterwards to be stored some months to free it from an empyreammatic and disagreeable taste.

Ask for "Drioli's Maraschino di Zara," purveyor to Her Majesty. Established 1768.

Maraschino Essence.—A concentrated extract obtained from the Marasca cherry by distillation. Sold wholesale at about 12s. per lb.

Marbled Soap.— (See also *Harlequin Soap.*)—A fancy kind of toilet soap. The marbled colouring is usually effected by dipping a sort of comb with wide teeth into a liquid colour, and then passing it through half set soap so as to streak it any colour desired.

Marc.—A technical name for the refuse, dregs, or caked residuum remaining after the oil or juice has been pressed out of seeds, apples, grapes, etc.

The marcs from apples and pears are often fed to cattle or are distilled for the manufacture of a kind of brandy (*eau de vie de marc*), after which they are used as manure. In Italy the grape stones are separated and pressed for the oil they contain. This oil has a nutty flavour and is edible, but is mostly used for lighting or in tanning.

Maréna.—A kind of dry salt fish, *Coregonus marœna*, very popular in Turkey.

Margarine (pr. *Mar'green*).—The name is derived from the Greek word *margaros* (pearl), referring to the white pearly globules present in most fats.

The general shopkeeper, especially the small one, should think twice before he begins to deal in margarine. Unless the sale is likely to be large, and the shopkeeper's family or assistants each and all fully realize the obligations of the Food and Margarine Acts, that branch of business had better be left alone. It entails many risks and serious responsibilities.

Margarine has had many other names, such as Dutch butter, Bull butter, Butterine, Oleo, etc., but it must now be sold under no other name than "Margarine."

It is generally manufactured by churning melted and clarified animal fats, usually beef or mutton fats, and occasionally lard or oils, with milk, skim milk, or cream. Margarine is really an imitation butter, coloured and made into rolls, prints, or lumps, and packed in boxes, crocks, and various other packages.

It consists chiefly of *oleo fat*, which is an *oil* obtained by hydraulic pressure from the softer or more easily fusible portions of the fat surrounding the kidneys of freshly killed oxen and cows. A hundred pounds of this raw fat yields about 35lbs. of pure *oleo*, which is reduced to a granulous mass of yellow colour, with a taste approaching that of ordinary butter. In manufacturing margarine the oleo is heated to a temperature of 113 to 120° Fahr. and then churned for about two hours with other oils brought to the same temperature, such as arachis oil, cocoanut oil, sesame oil, hazel-nut oil, and palm oil, stearin or neutral oil, also with a little ordinary cream, or new milk to give flavour. Five to 25 per cent. of these vegetable oils are commonly used, and the rest is oleo, neutral lard, and milk. The oil modifies the paste of the margarine, which is naturally too short and brittle, and gives it the oiliness of good butter. The quantity of oil varies greatly according to the season; thus, in winter, when the cold is intense, 30 and even

40° of oil is used, while in very hot weather very little or none may be used. Cotton seed oil was used at first, but has been found unsuitable because it turns rancid very quickly.

The nut oils possess flavours very like genuine butter, and are certainly free from any morbific micro-organisms.

When sufficiently churned together and coloured with a little annatto, the mass is turned out upon broken ice, or else cooled in iced water, to congeal it into margarine. It is finally salted and packed up for sale like genuine butter.

In some factories the churned mixture is turned into a wooden strainer, slightly inclined in order to run it off into a large tub. When it leaves the strainer to fall into the tub it meets a strong sheet of fresh water, which solidifies the margarine. In the tub the margarine floats on the surface of the cold water, and by the aid of an openwork basket the fatty matter, which looks like sleet, is collected. It is turned into perforated receptacles, and left to drain for a longer or shorter period, according to the temperature. This operation generally takes about two hours. After this the mechanical working of the margarine is begun. It is placed upon a round table, like those used in dairies, but very much larger, and the moisture is worked, in order to press out the buttermilk and give it the consistency of butter. It is next passed, in small portions at a time, through a horizontal worker, which is composed of two cylinders of wood with deep flutings, which spread out the paste and give it its nice appearance. It is then made into large cakes or put in tubs.

During the making of margarine, it should be noticed that it does not solidify in one mass, because during the slight fermentation which it undergoes before being drained it has not the peculiar taste which indicates good margarine. That is why it is necessary not to use too cold water.

To give to margarine the taste of good quality butter, the fat, whilst dropping, is sprinkled with a little special ferment mixture, which comes from the artificial manufacture of the ferments of good butter. As to cost of production, 3lbs. of the best margarine can be produced at the cost of 8d. from the following materials: oil at 2d. per lb., best refuse fats at 1½d. per lb., pure lard at 3d. per lb., and about 1½ oz. of butter fat to the pound, costing 1½d. Then there is the cost of churning through milk, also of packages, wages, etc.

Cocoa-nut oil has been found one of the cheapest and most suitable, its flavour when fresh seeming very agreeable and natural to butter, but the flavour quickly escapes on exposure of the margarine to the fresh air.

The above are outlines of what may be termed the legitimate processes as carried on in the best factories, but in some cases more degenerate ingredients have been employed.

The step preliminary to the first manufacture of butter substitutes was the adulteration of ordinary cream butter. Margarine, or rather oleo-margarine, was first invented by a French chemist, M. Mège-Mouriès, in the year 1868, in response to the wish of Napoleon III. for a cheaper butter for the sailors and the poor.

Then in 1872-74 the world-famed Holland dairies, in sharp competition with the butter makers of other countries, began to employ glucose for enlarging and cheapening their product, and this adulteration rapidly increased from 10 to 25 per cent.

As the proportion of new ingredients grew, the necessity for substances absolutely wholesome became highly desirable and even imperative. Repeated and expensive experiments under widely varying conditions ultimately proved *oleo* oil to be possessed of actual and exceptionally high merits as a food substance, and being both cheaper and more easily obtained, this animal oil soon became the chief ingredient. The essential difference between these fats and butter fats is

butyric flavour; but this flavour has no real food value whatever.

One great argument in favour of the use of margarine is that on analysis it has been invariably found to be much freer from *bacteria* than even genuine butter—the latter, in fact, frequently containing immense numbers of these micro-organisms. Old tallows are, it is true, apt to contain some of the earlier stages of *cisticerci*, or tape-worm, but margarines are now carefully manufactured from the oleo of *fresh* fat of newly slaughtered animals.

Holland has always been the foremost market in the world for margarine, and Rotterdam for liquid oleo, although nearly the whole of the oleo met with there is imported from the United States, and chiefly from Chicago. In the Netherlands there are upwards of thirty factories. Rotterdam comes first with its half dozen large concerns, then Oss, Nymwegen, Bois de Duc, Haarlem, Helmond, Weesp, Gouda, etc. Large quantities are also made in France, Norway, Germany, and America; but we have never received much from the two latter countries. In Switzerland it is compulsory to put 25 per cent. of butter in all margarine; in Denmark 50 per cent. of butter is allowed to be added, but in Germany none.

Imports from	1899	1898	1897
Norway . . . . cwts.	8278	8477	10827
Holland . . . . ,,	897806	844177	872473
France . . . . ,,	27721	30299	30563
O. countries . ,,	19370	17662	22680
Total . . . . ,,	953175	900615	936543

There are about twenty factories in Denmark, which produced in 1898 about 24 million pounds. The Danish law forbids margarine to be sold coloured beyond a certain shade of yellow. But although this regulation is acted upon, in the shops selling margarine there is given with every pound of margarine sold, a small tube of annatto, so that the purchaser can perpetrate the colouring for himself at home, and this is done largely in the case of hotels and large boarding establishments. About a score of factories or creameries have also been recently started in this country—one at Northam, Southampton (by foreigners), and others at Mauchline, Dunragit, and Tarff, in Scotland, so that although *foreign* importations have been declining these last few years, the consumption is undoubtedly increasing considerably. It is very probable this gradual displacement of foreign makes will continue, for consumers have naturally more faith in the British factories, which are worked under the inspection of the Government. Many of these factories have been opened in the very healthiest parts of the country, where fresh breezes and fresh waters have been made considerations of primary importance. They have also been fitted up with every modern appliance, and are marvels of equipment, orderliness, and cleanliness.

No statistics are published showing the exact quantities of material used in this country, but they are probably much the same everywhere. Statements showing the quantities and kinds of ingredients used in the United States for the fiscal year ended June 30, 1899, and also the percentages each ingredient bears to the whole quantity were prepared by the United States Secretary of Agriculture:

Materials.	Pounds.	Percentage each ingredient bears to the whole.
Neutral lard	31,297,251	34·27
Oleo oil	24,491,769	26·82
Cottonseed oil	4,357,514	4·77
Sesame	486,310	0·53
Colouring matter	148,970	0·16
Sugar	110,164	0·12
Glycerine	8,963	0·01
Stearine	5,890	0·007
Glucose	2,550	0·003
Milk	14,200,576	15·55
Salt	6,772,670	7·42
Butter oil	4,342,904	4·76
Butter	1,568,319	1·72
Cream	3,527,410	3·86
Totals	91,322,260	100·00

Statement showing the quantities and

kinds of ingredients used in the United States in the month of December, 1899, also the percentage each ingredient bears to the whole quantity:

Materials.	Pounds.	Percentage each ingredient bears to the whole.
Neutral lard	3,735,777	31·88
Oleo oil	3,369,085	28·84
Cottonseed oil	511,157	4·34
Colour	21,753	0·18
Sesame	50,500	0·43
Sugar	14,111	0·12
Stearine	12,705	0·10
Glycerine	1,212	0·01
Glucose	2,940	0·02
Butter	106,130	0·90
Salt	800,156	6·83
Milk	1,889,467	16·13
Butter oil	727,062	6·20
Cream	471,688	4·02
Totals	11,713,743	100·00

British farmers need not be unduly alarmed at the competition of this butter substitute. A large quantity of milk and cream is evidently necessary for its manufacture, and this has already resulted in higher prices being maintained for milk. In fact, the highest prices ever known for milk in Ireland and Scotland have been paid by the condensed milk and margarine factories. The demand for oleo fat has also raised the value of oxen. Besides, any hostile legislation against margarine will probably favour the *foreign* butter-maker much more than the British.

The manufacturers of margarine claim that their product is quite as palatable and decidedly more wholesome than second-class butter, if not equal to that of the very highest class, and there is plausible ground for this contention, at least as to much of the butter produced in England. Margarines, although originally of foreign invention and introduction, have evidently come to stay; and the British farmer, while admitting that they may as well be made in this country as imported from abroad, only reasonably argues, that it is unfair for retailers to pass off these substitutes as butter. It is complained that retailers often send by their own porters and vans margarine to hospitals, workhouses, hotels, and private residences when butter has been ordered, and that some shopkeepers, while exhibiting lumps of pure butter at about 1/- per lb. on a high counter, serve well-known and regular customers from 4d. or 6d. margarine kept out of sight behind the butter, and that "smart" assistants are well paid to work this fraud. It is also asserted that many lodging-house keepers and other housewives of the artisan class, who cater for their inmates, make considerable profits by purchasing margarine instead of butter for their lodgers.

The fight, therefore, is scarcely against margarine, but against dishonesty and falsehood. The simplest means of distinguishing between margarine and butter are referred to under *Butter* (p. 156). Again, many consumers of margarine do not like to be seen or heard buying that article at the shop counter whilst neighbours are buying genuine butter, and so it is expected that although butter is asked for margarine is meant, and the retailer who calls any special attention to the fact often gives offence; hence the temptation to say nothing but to wrap it in a paper, marked "Margarine"; but, as Mr. Trantom, late president of the Liverpool Grocers' Association, advises—and the advice is well worth remembering—"There should be no pandering to the pride of the lady who orders it 'for the servants' but dislikes to have it written '*Margarine*' in the bill, nor to the susceptibilities of the customer whose palate and whose purse are suited with margarine, but who dislikes to receive it in the wrapper the law prescribes. It is time to put the margarine trade upon a proper business footing. Let customers be persuaded or compelled to ask for what they want on the one hand, and encouraged to see that they get what they pay for on the other. There must be no half-heartedness about the way in which this new departure is begun; if there is, the 10 per cent. of dishonest, tricky traders will rob the 90 per cent.

of straightforward, honest ones of all the advantages the amended laws are capable of conferring upon the trade, and the tail will continue to wag the dog, as it has done with increasing vigour ever since the Margarine Act of 1887 came into operation." This opinion is being verified daily, and every retailer, assistant, or apprentice should at once make himself well acquainted with the *Sale of Food and Drug Acts* of 1875, 1887, and 1899. They are printed in full at the end of this Manual, and no person is fit to serve in a shop until thoroughly well versed in every section of the above Acts.

All casks, kegs, tubs, boxes, baskets, and other packages containing margarine must be branded in accordance with the Margarine Act, on the top, bottom, and sides in printed capital letters not less than three-quarters of an inch square (see sections 4 and 6), and the branding must be upon the basket or package itself and not upon the label or ticket (see *Foods Act* of 1899, section 6). In retailing it, the paper wrapper must bear the word "**MARGARINE**" in capital block letters, half an inch long, instead of a quarter of an inch as heretofore, and no other printing must be on the wrapper (see *Foods Act*, 1899, section 6).

Persons selling wholesale must keep a book or register showing Date, Quantity, Marks on packages, and Destination of each lot sent out. Some of the printers supply books ready ruled for this purpose, but dealers can easily rule these columns on their own paper.

Thousands of small shopkeepers have been ruined in the past, but more thousands are likely to be ruined in the future by mistakes on the part of wives, children, and other unqualified assistants selling margarine. No man is safe an hour who has to leave his shop in such hands. The wholesale dealers in adulterated or illegal goods always find out the small shopkeepers whereon to palm illegal imitations, and the inspectors as well know where to go to catch the victims. Retailers should, above all, be careful to buy from trustworthy firms.

Apply to Geo. Wall & Co., Ltd., Liverpool and Manchester (see adv., p. 10); J. & J. Metcalf & Co., Ltd., 45 Whitechapel, and 21, 23, and 25 Sir Thomas Street, Liverpool; C. Windschuegl & Co. (oils for), 1 Leadenhall Street, London, E.C.

Margarine-Cheese.—This has been made the legal name for *Imitation Cheese*, *Filled Cheese*, *Oleoine* or *Oleo Cheese*, *Lard Cheese*, *Metallic Cheese*, and any substance, whether compound or otherwise, which is prepared in imitation of cheese and which contains fat other than that derived from milk. It has mostly been made in the United States, but some is also made in Holland, and there are now factories in England. The materials from which it is made are various, and necessarily cheap. The basis is skim-milk, which is so abundant in the creamery districts as to be a waste product with hardly any value. The fats added may be oleo oil, neutral lard, inferior hog-fat, cotton-seed oil, cocker-nut oil, or butter of lowest grade which has been put through certain processes of renovation. Still cheaper fats have also been used. It seems that this cheese can be put on the market at a cost of 2d. or 2½d. per lb. In large lots it is freely offered at three-fourths the price of genuine cheese, or less, and may yield a substantial profit at this rate. Like that of margarine and butter imitations, the manufacture of margarine-cheese has lately greatly improved; and, now that the manufacture and sale is sanctioned by Parliament and the law, a recognised and well-defined legitimate trade is rapidly opening out for it. A good grade of neutral lard is generally used, and the product now comes into the market appearing, while fresh, so fine in quality, and with so clean a taste as to be really very deceptive and difficult to detect by ordinary sampling. But there is a lack of flavour or aroma in most of the makes, and sometimes a heavy "soggy" condition may also be noticed. In warm weather the quality of these is short-lived, and they are apt to become rank and offensive; although while fresh this is not noticeable. In many districts where only low-priced foods will sell,

there is already a brisk and increasing demand for good Margarine-cheese. Several reputable but timid traders, however, appear to hesitate about handling the article, and this was once the same with margarine; yet both products are admittedly more nutritive, economical, and superior in every way to the inferior qualities of butter and cheese; and, so long as they are made from sound and healthy materials and sold under their proper designation, there can be no reasonable objection to either their sale or consumption. The finer qualities of both cheese and butter are twice as costly, and many working people with large families wisely refrain from indulging their appetites at the expense of other comforts. In America, Chicago has become the chief depôt and distributing point for Margarine-cheese, and even *Limburger* and *Brick-cheese* are there represented in the same way.

In the United Kingdom the English made Margarine-cheese, under Government inspection, seems to have gained a decided preference over the American article, for, although the consumption has so visibly increased, the total imports from abroad have declined, and in 1899 were only about 280 tons. According to the Food and Drug Act of 1899, when stored in bulk, imitation cheese must be branded, when exposed for sale it must be labelled, and when retailed it must be delivered wrapped in printed papers with the words "*Margarine-cheese*" in letters half an inch long, and no other printed matter must appear on the wrappers. Wholesale dealers are required to keep a register of each sale, same as with margarine (see end of "*Margarine*").

Margaux Wines.—These are the most popular of the red Bordeaux wines, grown in the Medoc district.

Margaux is a large commune in the Medoc district, and produces about 1,000 tuns of rich red wine yearly. It is here that the renowned *Château Margaux* of Bordeaux is made. The estate is some 200 acres in extent, yielding only 80 to 100 tuns a year, but in value exceeding £30,000. Most of this wine is really consumed in England. *Rausun* is another celebrated product of the same commune.

Marie Biscuits. — Round-shaped, about 2½ inches in diameter, one-fifth of an inch thick; ornamented by a sort of key-pattern border, and weigh about 60 to the lb. Quality rich and sweet; not unlike Oswego, Arrowroot, and Osborne, but of finer texture than the two latter.

Marinade.—A pickle of wine or vinegar and oil, salt, spices, etc., in which food is sometimes steeped before cooking. Herrings and mackerel are specially prepared in this way.

Marine Glue. — This is not really glue at all, but a strongly adhesive composition made of a mixture of caoutchouc, or indiarubber, coal naphtha, or oil of turpentine, and shellac. These are heated and stirred until combination takes place, and then run on metal plates to cool and form sheets. When used it should be heated to 248° F., and laid on with a brush. Not being liable to be affected by the action of ordinary heat or water, it is extensively used for covering the seams in ships after they have been caulked, and will stand all climates.

Recipe:—1 oz. caoutchouc, 2 ozs. true asphaltum, and a sufficient quantity of benzole. The caoutchouc is first dissolved by digestion and occasional agitation, then the asphaltum is gradually added. This solution should have the consistency of treacle.

Marine Ketchup.—This is prepared in the same way as camp ketchup, only with double the weight of shalots, and the addition of a pint each of mushroom ketchup and vinegar.

Marine Soap (also known as *Salt-water Soap, Sea-water Soap*, etc.).—These soaps, like soft soaps, are made by the cold process of manufacture, and not raised to boiling point, as are the best domestic soaps. Hence marine soaps will dissolve (or lather) as well in salt water as in fresh, which other soaps will not do, owing to the salt curdling them. Marine soaps are mainly made

from cocoa-nut oil, palm-nut oil, with soda lye of 1·163 sp. gr. The alkali is added gradually until the presence of a faint excess is indicated by the taste. Salt or brine, sodium silicate, and sugar are often added to this class of soap, and it often contains 70 per cent. of water. A high temperature tends to brown the fats and give the soap a bad smell, so this is usually disguised by powerful scents, such as oil of mirbane, etc.

Marjoram, Sweet.—Da. *Mariolien;* F. *Marjolaine;* It. *Margorana;* Port. *Majorona;* Sp. *Mejorana.*

Sweet or knotted marjoram (*Origanum majorana*) is a native of Portugal, and is a highly esteemed and fragrant herb, possessing a grateful aroma, and is very popular in cookery. In addition to being used fresh, the leaves and buds are also dried, crushed to powder, and bottled. Sold by shopkeepers, for flavouring soups, stews, sausages, forcemeats, etc., on occasions when the fresh green herb cannot be procured.

Marjoram Tea is said to be very good for nervousness.

Marking Inks.—The following are, perhaps, the simplest recipes:—

1. Dissolve 3 parts of borax in 30 parts of hot water, then add 2 parts of shellac. When all dissolved, add a little aniline colour or pigment of the colour required.

2. Mix 1 part of lampblack, 10 parts of petroleum oil, and 10 parts of coal tar.

Marl.—A natural mixture of clay and chalk with sand. It is characterised by effervescing with acids, and according to the predominance of one or other of its component parts, it is classed as argillaceous, calcareous, or sandy marl. It is very generally employed as a manure for sandy soils, especially in Norfolk.

Marmalades. — F. *Marmelades;* Port. *Marmalada;* Sp. *Mermelada.*

There are several kinds of these confections or conserves, made from the pulp and rinds of various fruits, such as apples, apricots, lemons, limes, oranges, peaches, pears, plums, quinces, etc. Others are prepared from barberries, mountain-ash berries, ginger, pine-apples, etc., and all are more fully described under their respective names. (See *Orange Marmalade*, *Lime Fruit Marmalade*, etc.)

The chief adulterants of marmalades are *glucose*, glue, and apples.

Manufacturers are sometimes accused by persons who ought to know better of using turnips, and, doubtless, such instances of credulity will ever provide food for cynical philosophers, but let these try to make a marmalade from turnips! The use of glucose has cheapened marmalades considerably, although it cheats the consumer.

Mention of marmalade is found in history as early as the reign of Henry VIII., a noble lady being thanked by that king for her "marmalade made of quinces."

The word marmalade is derived from the Portuguese word *marmalada* (from *maremelo*, a quince); and, as a matter of fact, marmalade was originally made of quinces and sugar only.

There is also a tree *Mucuma mammosa*, known as the "marmalade tree," from the juice of its egg-shaped fruit, which resembles marmalade.

Tiy Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool.

Marolles Cheese.—A small square French kind made at Marolles or Maroilles, in the Nord department. It is rich and soft, and has its admirers among epicures, but its odour is very strong and disagreeable to most people, especially in summer.

Marrons Glaces.—The French name for larger *Iced Chestnuts*. They mostly come from Paris, in snow-white frills, and are a very delicious sweetmeat. "*Marron d'Inde*" is the French for the bitter Horse Chestnut, and "*Châtaigne*" for the ordinary cultivated sweet chestnut used as human food. (See *Chestnuts.*)

Marrowfat Peas.—These are a very choice but late variety of peas, grow very tall, and have a sweet and very

agreeable taste. When dried they have a wrinkled appearance. Blue marrow-fats are usually classified as "ordinary," "small," and "extra small," and sold in sacks of 504lbs. gross.

Apply to Barringer & Co., Ltd., Rock Valley Mills, Mansfield; Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool.

Marsala Wine.—A Sicilian white wine, somewhat full-bodied, generally containing a high percentage of alcohol. Rather darker than sherry, it resembles second-class Madeira in colour and taste, but is not quite so heady, and has a very agreeable perfume of its own. It is a good sound useful wine, and is much improved by age. A voyage to India and home makes it nearly equal to Madeira. Marsala is generally cheaper than sherry, which, indeed, it often replaces.

It has been very popular in England since 1802, when it was supplied to the British fleet.

It takes its name from the town of Marsala, but was originally produced at Bronté on an estate which belonged to Lord Nelson. Unfortunately some of the Marsala districts have recently been invaded by phylloxera, but efforts are being made to replace the old vines by American plants.

Marseilles Soap.—Once a very favourite variety imported from Marseilles, the chief seat of soap manufacture in France. Olive oil is claimed to be used in this and certain other French toilet soaps.

Marwa.—A raw spirit prepared in Assam from rice.

Marzipan or **March-Bread.**—A popular German sweetmeat, consisting of one part of ground almonds and three parts of sugar, with a little glucose added, all pounded together into a paste. When properly made it undoubtedly forms a most wholesome and delicious confection. It is made up into an endless variety of forms representing fruits, animals, fishes, etc., etc., and is also used as almond icing for wedding cakes.

Mashlum Scones or **Maslin Bread.** — Sometimes spelt *Meslin*, signifying mixed grain.)—Maslin bread is made from a mixture of wheat and rye, sometimes sown and grown together, particularly in France, in the Alpes Maritimes, and in the North of England, where good wheat crops cannot always be depended upon. After bad seasons *maslin bread* is largely used for local consumption.

Mashlum scones used to be commonly eaten by the small farmers and agricultural labourers in Scotland in the bygone Protection times. These scones were made of flour consisting of one part beans and two parts oats, ground and sifted by hand, and even bran would often be added.

Mastic.—Du. *Mastix*; F. *Mastic*; G. *Mastix*; It. *Masticeo*; Ir. *Maisteog*; Port. *Almecega*; Sp. *Almaciga*.

A resinous substance in the form of semi-transparent "tears," or grains, of a yellowish white colour, with a faint smell, and a farinaceous appearance.

It exudes naturally from the lesser turpentine tree and the *lentiocus*, after incisions have been made, and has aromatic and astringent properties. Mastic is used in the composition of varnishes, also used as a masticatory, supposed to strengthen the gums, clean the teeth, and perfume the breath.

Matches.—F. *Allumettes*; G. *Zündhölzer, Streickholzer*; It. *Fiammiferi*; Port. *Phosphoros*; Sp. *Cerillas*. (See also *Lucifers, Safety Matches*, etc.)

The savages used to get fire by rubbing two pieces of wood together. This mode is still in vogue in some of the smaller remote islands of the Pacific and elsewhere. The usual way of performing this operation is to press the sharpened end of a stick of hard wood against a piece of soft wood, notched to receive the point and twirl it rapidly back and forth between the palms of the hands. The small particles rubbed off are kindled after a while, and a little dry moss is added to increase the flame until it is large enough to communicate to twigs and splinters. After a time "fire stones" were used, which on being struck

on steel produced sparks, and the early inhabitants of Britain got their fire in that way. It was afterwards found better to use *flint* and *steel* to produce light, with the *tinder-box*, into which matches tipped with sulphur were dipped to be lighted. About 1826 a mixture of chlorate of potash and sugar was invented, and upon dropping oil of vitriol (sulphur) into such a mixture the whole thing would take fire.

The first kind of *lucifers* were made with this mixture, but it was necessary to have also a bottle of oil of vitriol, into which the matches had to be dipped in order to set them alight. Boxes containing only 50 of these matches were sold at a shilling the box.

Another plan was to make *friction matches* with a mixture of chlorate of potash and antimony, which were ignited by drawing them through sand-paper.

The late Mr. John Walker, chemist of Stockton-on-Tees, was the first to invent the lucifer match in 1827, and his discovery was followed by Sir Isaac Holden's in 1829. In 1831 a Frenchman named Saurin, made a match of chlorate of potash, phosphorus, and sulphur; and for his invention enjoyed a pension down to 1895, when he died, aged 85, at St. Lothian (Jura).

It is said the first real *friction matches* were made in 1832, and were known as "Congreves," but Kammerer, the German, discovered his in 1833. Janos Irmzi, the Hungarian, invented his in 1835, and the first American patent for friction matches was taken out in 1836. Some authorities, however, assert that the only friction matches known up to 1844 were discovered and made by M. Chancel, Paris; and that the Prometheans, first made in England in or about 1830, were contrived on the same principle, viz., the ignition by friction between two hard substances.

As with most other inventions there is a lot of disputes as to the first discoveries in match-making, and it is not easy to ascertain the truth. It is certain that in 1833 phosphorus was generally introduced for match-making, and created quite a revolution. The plan was to prepare a mixture of phosphorus and gum, which was placed on the end of matchwood or paste-board tipped with sulphur, and even down to the present day these matches are sometimes employed by cabmen and sailors, who like them because they are not so easily blown out. The smell of sulphur, however, was objectionable in houses, and matches began to be tipped with paraffin instead.

In 1840 red or amorphous phosphorus was introduced. This is now used in making the slips or friction surface for "Safety Matches," which "light only on the box." (See *Safety Matches.*)

Common *phosphorus strike-anywhere matches* are usually made as follows:—The wooden splints are cut by steam machinery from the best quality of pine planks, dried at a temperature of about 400° F. These splints are made in two sizes, known as "large," about 2¼ in. long, and "minnikins," which are somewhat shorter. Double lengths are used, so that each end of the splint is coated with the igniting composition, and then cut in two in the middle, so as to form two matches.

English made splints are usually made square, but in Germany they are made round by forcing the wood through circular holes in a steel plate. The ends of the double splints, having been slightly charred by contact with a red hot plate, are coated with sulphur by dipping them to the requisite depth in the melted material. In some cases the ends are saturated with melted wax or paraffin instead of sulphur. The splints are next arranged in a frame between grooved boards, in such a manner that the ends project on each side of the frame.

These projecting ends are then dipped with the yellow or white phosphorus composition, which is spread to a uniform depth of about one-eighth of an inch on a smooth slab of stone kept warm by means of steam beneath. When partially dry the tipped splints are taken from the frames cut through the middle and placed in heaps of 100 ready for "boxing."

On account of the moisture of our climate, the composition used in England for tipping phosphorus matches contains a larger quantity of chlorate of potash which imparts a snapping and flaming quality, and but little phosphorus.

In Germany, where the industry has lately become of enormous importance, aspen wood is chiefly used, and the proportion of yellow phosphorus used is much larger, with nitre or some metallic peroxide instead of chlorate of potash. The German matches therefore light quietly with a mild lambent flame, but they are easily spoilt by damp. Up to 1862 the manufacturers of Austria and South Germany controlled the match business of the whole world.

There are two kinds of phosphorus, *i.e.*, the element appears in two forms, viz., the ordinary yellow, or white, phosphorus, which is necessary for the ordinary matches now used, and the red, or amorphous phosphorus, discovered or "invented" by Schrötter. It is obtained by heating the yellow or common kind in a closed iron vessel to a very high temperature, with the result that its fumes appear to be all dissipated; it is rendered odourless; it does not shine in the dark; is far less inflammable than the yellow kind; does not strike fire by percussion or moderate friction; and is quite harmless to the workers. It is this innocent amorphous phosphorus which is used in the composition of the prepared slips on which the safety matches are ignited. No phosphorus at all is used in the composition of the safety match, and only the harmless kind of phosphorus on the slip on which the match is struck. But then, these matches will strike "only on the box," whereas the public, or a section of the public, persist in requiring a match, or vesta, or what not that will strike almost anywhere; hence the necessity for the white or yellow phosphorus, which throws off a deadly poison in match factories and produces among the work-people the terrible disease "Phossy-jaw" (phosphorus jaw) or necrosis of the jaw. About 60 tons of this dangerous kind is used every year, and only about 4 tons of the harmless red phosphorus, which is used for "safety" matches. There are numerous recipes for making common matches. Four parts by weight of chlorate of potash, half of the common phosphorus, four of fine glass powder, one of whiting, and two of glue; some manufacturers use an oxide of lead, or an oxide of manganese with the potash salt. Gautier's "Cours de Chimie" gives three parts of common phosphorus with two parts of the lead dioxide and sand and gum.

An inflammable compound without the lethal white or yellow phosphorus is preferable in match-making; 36 parts of plumbic dioxide, 15 of chlorate of potash, 9 of manganese dioxide, 8 of flower of sulphur, 6 each of infusorial earth, pulverised glass or sand, and the red, or amorphous phosphorus, and 8 of glue. Will ignite by friction on any surface.

Swedish Matches.—Sweden exports 1,000 million boxes of matches yearly, and has the oldest match factory in the world. The export of lucifers from that country now reaches about 15 million kilograms a year. They are made almost exclusively of white poplar wood, which is there very cheap and plentiful. The brown colour of Swedish matches is due to the antimony trisulphide used in the inflammable compound.

In France, Greece, Servia, Roumania, Italy, Portugal, and Switzerland the manufacture of matches is monopolised by the State—in the case of the latter on hygienic grounds, but in the other cases for financial gains.

A box containing 100 of the commonest matches cannot now be bought in France for less than a penny.

Apply to Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool.

"Matchless" Metal Polish.—Manufactured by Paton, Calvert & Co., Leeds Street, Liverpool.

This is the polish that carried off the *Highest possible Award* at the *World's Fair*, Chicago, 1893.

It certainly imparts to metallic articles a brilliancy unequalled by any other polish, and has by far the largest sale. Guaranteed free from acid.

Mate or **Yerba de Mate** (pr. Mat-tay).—See *Paraguay Tea.*

Maties.—A commercial term for the best quality of herrings, fresh or cured, which have been caught when in finest condition—that is, when the roes and milts of the fish, though small in size, are perfectly developed. The fish at this stage are considered the most delicious as well as the most nutritive.

Matingola Jam.—A preserve made from the Natal plum. (See *Amatungulu*, p. 28.)

Mats.—Du. *Matten;* F. *Nattes;* G. *Matten;* It. *Stuoje;* Port. *Esteiras;* Rus. *Progoshki;* Sp. *Esteras.*

These textures are composed for the most part of flags, reeds, bark, rushes, grass, rattans, old rope, etc. Large quantities, known as "bast" mats, are imported from Russia, where the natives make them from the bark or fibre of the lime or linden tree.

Reed mats, often beautifully variegated, are extensively manufactured in Spain and Portugal, also quantities of matting from the Esparto rush. Rush floor mats and rattan table mats are also exported largely from China and Japan.

There seems to be considerable prejudice in England against mats made in British prisons, but it does not appear to extend to those made in foreign prisons.

Mattei Cancer Cures.—(See also *Patent Medicines.*)—These globules were analysed in 1893 by Dr. John Clark, of Glasgow, and found to contain nothing but sugar, starch, sulphate of lime, water, and a little albuminous matter.

The inventive Count Mattei, an ex-Italian colonel, died in 1896, and the formulæ for his so-called remedies for cancer, scrofula, fever, etc., were left to his adopted son, Count Mario Venturoli Mattei.

Mattei Electricities.—These have been analysed by several competent authorities, and declared to be nothing but simple water. Two analysts say there is a faint odour from the water.

Matzoon.—A popular food made for centuries in Armenia from fermented milk.

Mauviettes, in tins about 5/- each. These usually consist of boned larks, preserved whole, with truffles. There may be four, five, or six birds in a tin.

Mavro.—A popular red wine in Cyprus.

Maw Seed or **Poppy Seed.**—These are the very small dark blue, or black, seeds of the white poppy (*Papaver somniferum*), not unlike fine gunpowder in general appearance. They are, however, sweet to the taste, oleaginous and nutritious, and are often used as a substitute for almonds in confectionery and mixtures. They are considered good food for moulting cage birds, and are also pressed for *poppy-seed oil.*

Mayonnaise Sauce.—A thick white or yellowish sauce or salad dressing for cold dishes of fish, meat, chicken, etc., made in various ways, say, 1 oz. Powdered turmeric, 1 oz. powdered tragacanth gum, 8 ozs. olive oil, 8 eggs, 5¼ pints water, 1½ ozs. ground mustard, 8 ozs. salt, 2 ozs. acetic acid (glacial), ½ oz. tinc. of capsicum, 1lb. sugar. Mix the first three ingredients in a mortar capable of holding 1 gallon, then add the whipped eggs, and mix the whole well to a light froth; next mix the mustard and water separately, allowing this to stand 10 or 15 minutes for the flavour to develop. Then add the last four ingredients, mix and add the liquor gradually to the contents of the mortar. It should form a smooth, uniform emulsion, and should be finally strained through a cheese cloth.

A good one may be made from the yolks of two eggs, six tablespoonfuls of salad oil, four of vinegar, two of cream, and one of white stock, with a little salt and pepper. Sometimes ground mustard, turmeric, gum tragacanth, and cayenne are used instead of stock.

Mead or **Metheglin.**—Da. *Miöd;* Du. *Meede;* F. *Hydromel;* G. *Meth;* Ir. *Micdh;* It. *Idromele;* W. *Mez.*

Fermented liquors consisting of honey and water, sometimes enriched with spices. Both these Saxon beverages were favourite drinks with the richer classes in the middle ages, especially with the Greeks and Romans, but have since been almost totally superseded by ales, wines, and spirits; and their use in England is now nearly limited to Sussex.

A similar drink is very popular in Afghanistan, bees being very numerous in that country.

Mead is prepared from the honeycombs from which the honey has been extracted; the comb being simply boiled in water with a little yeast added, after which it is drained and allowed to ferment. *Metheglin* is a fermented liquid similarly made from fresh honey and water. They both form brisk beverages of moderate alcoholic strength, and are much improved by keeping.

Meadow Clary or **Wild Clary.**—See *Clary*.

Meal.—Da. and Du. *Meel;* F. and It. *Farine;* G. *Mehl;* Rus. *Muka;* Sp. *Farina;* Sw. *Miöl;* W. *Mâl.*

Edible grain or pulse ground to fine particles, but not bolted or sifted; hence it primarily includes the bran as well as the flour of wheat, barley, peas, beans, oats, etc. Indian meal or corn meal is, however, a term equally applied to ground maize whether bolted or unbolted.

Mealies.—An African name for maize or Indian corn as cultivated in Natal and the Cape Colonies. Grows best about Pretoria and Johannesburg.

Meat Biscuits.— These are often made from one part of lean meat, minced small and pulped, then beaten to a dough with two parts of flour or meal, and a little seasoning (no water) added. When thoroughly kneaded they are baked in a moderately heated oven.

Others are made as follows:—

The flour is mixed up with a rich fluid extract of meat, and the dough is cut into pieces and baked in the usual manner. An ounce of either of the above meat biscuits can be easily made into a pint of good soup.

Meat Extracts, etc.—F. *Extraits de Viande;* G. *Fleisch extract;* Lat. *Extractum carnis.* (See also *Beef Essences*, p. 85, *Liebig's Extract*, *Carne Liquida*, etc.)

When raw meat is finely chopped and macerated in the same weight of cold distilled water, and then squeezed out, the water dissolves from 16 to 24 per cent. of the weight of the dry flesh.

The fibrine of the flesh is about three-quarters of the solid residue. If the watery infusion be heated, the albumen of the flesh separates as a flocculent precipitate when the temperature of 133° F. is reached, and the red colouring matter of the blood, likewise albuminous, coagulates at 158°. The infusion, after being freed by boiling from albumen and the colouring matter of blood, has the aromatic taste and all the properties of soup made by boiling the flesh.

When evaporated at a gentle heat, in a water bath, this infusion becomes darker coloured, finally yellowish-brown, and acquires the flavour of roast meat. When dried up, there is obtained a brown, somewhat soft, mass, amounting to about 1lb. from 32lbs. of ordinary lean meat free from fat and bone.

The Extracts now in the market may be divided into four sections:—

1. Extracts by the Liebig process, or modifications of it. (See *Liebig's Extract.*)
2. Bouillons.
3. Jellies.
4. Juices.

The *second* class may be called flavoured and medicated solutions, in which has been restored some of the albuminoids that coagulation and straining first robbed it of. These are more of foods, but not so stimulating as the Liebig, because not so condensed. The *third* class (jellies) are made by boiling down meat consisting of the gelatinous parts as well as the lean meat until a jelly is formed, and this in many cases is fortified by the addition of the Liebig Extract.

The meat *juice* is reddish in colour, which shows that in the preparation it has not been subjected to great

heating. The makers claim special methods of manufacture. In some cases the lean, raw meat is taken and minced, and an equal volume of water added, and then squeezed under great pressure, and strained. The juice is then frozen, the water in it freezing out first, the excess of water being separated by a special process. Some authorities say that these are apt to contain unaltered animal matter, and therefore are more prone to putrefaction.

The very dark extracts are not necessarily the strongest, as the deep colour may be due to vegetable colouring matter. On the other hand a large number are heavily adulterated with *glucose*.

The keeping properties of the extract is mainly due to the absence of the albumen. Great care is necessary in making the extract, for one ounce spoiled by burning affects the whole bulk.

There must be the latest machinery for cutting the lean meat, hydraulic pressing, perfect cleanliness, perfect command over the temperatures, ready disposal of the fat, offal, etc., and the beef must be freshly killed. Cattle between three and four years old are best.

The meat is "stewed" rather than "boiled," in a jacketed vessel, by steam, and the concentration of the clear soup is done in vacuum pans. Only good, sweet, fresh lean meat can be used. The big centres of manufacture are Chicago, Buenos Ayres, Queensland (Townsville, Rockhampton, Gladestone, Bowen, Brisbane), New South Wales (Ramornie), Sydney (Meat Preserving Co.), New Zealand (Hawke's Bay—Nelson Bros.).

The practical methods of manufacture are broadly on the same lines everywhere, but each centre has invented some little plan or contrivance of its own. A model South American factory—that of the Liebig Company's Works at Fray Bentos, consists of a large, cool, dark flagged hall kept scrupulously clean. Here the meat is weighed and passed through apertures to cutting machines of special design, that can get through an incredible amount of work. Here the meat is passed into digesters, which hold about 12,000lbs. each, and it is "digerated" by high-pressure steam 75lbs. to the square inch. The liquid is then run to a series of fat separators in a hot state. It is then clarified and filtered, and finally evaporated at a low temperature.

In preparing some of the meat extracts the residue of the meat (fibrine, gelatine, and coagulable albumen) is dried and powdered, and finally added to the juicy element.

Dr. Garcia, at Fray Bentos, has introduced the most successful method of preparing the liquid extracts, and very large quantities of his product are imported, to be flavoured and bottled in this country.

There is an ever-increasing number of these meat extracts, essences, juices, fluids, pastes, and bouillons advertised, but after all the best of them cannot properly be termed a food.

And in the matter of food we should guard against the dogmatism of advertising smatterers, who talk so glibly of flesh-formers, fat-formers, bone-formers, and so on, as though one had only to eat fat to become fat, bone to become bone, flesh to become muscular. Other favourite ideas are that eating fish increases the brain, that there is as much nourishment in an egg as in a chop. Is it to be wondered at that where cannibalism is practised, native "scientists" preach that "the proper nourishment of man is *man*"?

Many poor persons, who can ill afford the money, gather together their shillings in times of sickness to buy an "essence of meat," under the idea that what is called an *essence* or *extract* must be a strong food, but they are often misled and starved.

An ox can only be got into a teacup by leaving the greater part of the animal outside. The chief nourishers of life are not creatin and creatinin, but albumin, myosin, fat, gluten,

starch, and sugar, and these cannot be taken better than in their natural bulk. Some of the preparations, however, possess considerable value as stimulants, and being soluble in hot water, they are also excellent for flavouring foods. Jews, as also certain "castes" in India, and vegetarians are not allowed by their laws to use the ordinary meat extracts.

The most satisfactory and salable preparations which we know of in this line are "*Liebig's Extract*," and "*Bovril*," described in their alphabetical order elsewhere in this book, also Armour and Co.'s Extract of Beef (Solid) and Vigoral (Liquid), wholesale depôt, 8 and 9 King Street, West Smithfield, London, E.C.

Meat Pies.—See *Pork Pies*.

Medicated Soaps. — (See also *Soaps*, *Fancy* and *Toilet*).—A great number of these soaps are now in the market, containing or professing to contain various antiseptic, curative, or special cleansing properties. They embrace carbolic acid, creosote, paraffin, terebin, borax, camphor, thymol, sulphur, zinc, eucalyptus, and a host of other similar substances.

Eucalyptus and formalin are now competing with mercury iodide in disinfectant soaps. Formalin is a most effective steriliser, but English soapmakers consider the smell to be offensive. The demand for eucalyptus soap during the summer months is often in excess of the supply.

Medicated soaps are mostly made in the ordinary way up to a certain point, whence they diverge into one of two classes, viz., *Milled Soaps*, prepared by incorporating the medicaments with the neutral soap stock; or into *cold-stirred coker-nut oil soaps*, with which the drugs, disinfectants, and other active or quasi-active medicinal ingredients are mixed, while the soap is in course of formation either in the crutching or the frame. The former class is the best, on account of the opportunity for more careful preparation.

The list of these soaps is continually changing, but the most fashionable now are — Carbolic, Tar, Sulphur, Borax, Tannin, Liniolin, Camphor (or Opodeldoc), Turpentine (or Terepine), Thymol, Ichthyol (or Fish Oil), Creolin, Iodine, Alcoholic, Cucumber, etc. Great care and precision are necessary in making some of them up to officinal requirements. As with other fancy soaps, a little of sulphur, borax, camphor, or other drug is crutched in with the ordinary materials, not forgetting suitable colouring matter. There are, however, manufacturers who, quite ignorant of chemistry, turn out soaps quite deficient of the virtue aimed at, and many of the products contain none of the drug which they are named after. (See "*Arsenical*" *Soap*, etc.)

Medicated Wines. — These can only be sold by the holders of wine licences, unless they are rendered so medicinally nasty as to be incapable of being used as beverages. *Quinine Wine* is perhaps the most popular of them, but *Calisayine*, *Coca Wines*, *Meat and Malt Extracts in Wine*, and similar patented or registered concoctions, are formulas more plausible than sound. Although frequently prescribed or recommended by medical men, it can only be by those oblivious of physiology.

Both Calisaya and Coca have for their base very poisonous alkaloids, and persons who once get used to them can rarely give them up.

Pepsin Wine may be sold without a licence if made with 320 grains of pepsin and 120 minims of strong hydrochloric acid to each pint. The addition of 2 ozs. of glycerine improves this. One drachm of the wine will digest 100 grains of albumen.

Medlars. — F. *Nèfles*, *Mesles*; Port. and Sp. *Nesperas*. (See also *Loquats*.)

The fruit of the medlar tree, *Mespilus germanica*, and nearly related to the quince and crab-apple. There are several semi-wild varieties of the medlar common in the South of Europe, but, although occasionally cultivated

here, they are somewhat rare in English hedgerows.

The chief varieties are the *Dutch*, the *Nottingham*, the *Royal*, and the *Stoneless*. The latter is the smallest, but keeps the best. The flowers are large and white, and the fruits grow on the points of the shoots. The fruit is somewhat pear-shaped, but otherwise resembles a small brown-skinned apple, and with an unusually broad disc or aperture at the summit which exposes the interior horny cells.

Medlars are generally eaten raw, but not soon as gathered, or they will be found hard and disagreeable; but if kept about three weeks they turn mellow ("bletted"), as if going rotten, and are then very nice and tasty. This term "bletted" has been Anglicised from the French *blessé*, signifying that bruised appearance we see in apples, persimmons, and other austere fruits. It is an intermediate stage between maturity and decay. If gathered before ripe, the fruit shrivels instead of bletting. November is the usual time for gathering. They are sometimes preserved in brandy; also preserved in sugar. For jelly the fruit should be ripe, but not quite so much bletted as for eating.

Medoc Wines. —The Medoc is a district some forty miles long by five or ten wide, on the banks of the Gironde, on the North-West of Bordeaux, in France, and produces both red and white wines. They comprise many celebrated red kinds, such as Château Margaux, Château Lafite, Château Latour, and others of more moderate cost.

Medoc Wines are chiefly noted for their delicate aroma, bitterish flavour, and freedom from headiness.

The vines in this renowned district are planted only a yard apart, and the main stems are allowed to grow only a foot high, fastened to short stakes with horizontal laths ten or twelve feet in length, along which are trained two branches of each vine. The grapes are thus kept from touching the ground, while at tre same time receiving both the direct and the reflected heat of the sun, and this cultivation is considered to be the best known.

To develop their finest properties, Medocs should be kept several years in the wood as well as in the bottle. They are often sent long voyages in the hold of a ship, and such voyage is then usually branded on the cask or case. Medocs for England are sometimes fortified with extra alcohol, but this destroys much of their bouquet.

Melons. —F. *Melons;* G. *Melonen;* It. *Meloni;* Port. *Meloes;* Sp. *Melones.*

These form a salable and profitable line for grocers and fruiterers, especially during the early part of September, when they are both cheap and plentiful.

There are three classes of the *Cucumis melo* usually cultivated, divided according to the colour of their flesh—viz., scarlet-fleshed, green-fleshed, and white-fleshed, all of which are members of the gourd family, and of the same genus as the cucumber.

One class is known as *Musk melons*, comprising the citron, cantaloup, nutmeg, and pine-apple melon, as grown to perfection about Montreal. They have to some extent been cultivated in this country since 1570, and were originally introduced from Jamaica.

The other class are the Water melons (*C. citrillus*), oval, dark-green, cucurbitaceous fruits with white flesh, of which the best varieties are the Spanish, the Carolina, the orange, the apple-seeded, etc.

Spanish melons probably excel all others. Some of the best are grown in Valencia, and exported in large numbers. *Chittas* are a fine white-fleshed Indian variety of sweet melons grown about Lucknow.

The sub-varieties of melons are too numerous to describe separately, being of all sizes from three to fifteen inches in diameter, and weighing from 1lb. to 50lbs. each; round, oval, and long; and with outside colours from white and yellow to a dark olive green, and often variegated.

In the Cantaloups (so-called from Cantalupo, a country-house of the Popes, near Rome, where they have been extensively cultivated) we have both round and oblong, plain and netted, and scarlet, orange, or green-fleshed fruits, and of the finest quality.

MELON.

There are also smooth, thick, and warty kinds, while some are cracked in a net-like manner. The inside flesh or pulp is also of divers colours—green, red, yellow, etc.

The young and tender half-grown fruits are often pickled in their rinds with salt and vinegar, like cucumbers, or preserved with sugar and spices.

Most melons have a sweet taste, and may be eaten raw with or without pepper, salt, ginger, sugar, etc., and in hot weather the raw melon is a deliciously slaking and cooling fruit. The stringy and watery insides and seeds of ripe melons are not eaten.

How to tell a ripe melon:—The rinds of melons, when left on the vines to mature, generally become hard and yellow, and the pulp brittle, and when, under pressure, you hear the inside crack or give way, it may be regarded as a sure sign that the melon is ripe and has matured well on the vine. This vine is an annual trailing plant, and is readily raised from seeds, and these should be saved from the finest fruits.

If a melon remains on the vine until properly matured, the side on the ground will be found to have changed from a white to a pale yellow, and upon close examination numerous small pimples will be noticed on the surface, particularly on the outer edge. These pimples never appear on those that are not ripe or have been prematurely pulled.

Sometimes the desirable pale yellow colour is produced prematurely by turning this part of the melon to the sun for a day or two, but the yellow thus produced is of much deeper shade. This, in connection with the absence of pimples, will readily tell the experienced eye how the colour was produced.

If the skin will readily peel, leaving a hard, shelly appearance, it is a good indication that a melon is ripe, and also if it has a dull brown appearance. All these signs are rarely seen at the same time, but the presence of any one is sufficient to indicate the ripeness of a melon. (See *Water Melons.*)

Melon Syrup.—The juice of the *cucumis melo.* It is a popular important article of commerce in the United States. This juice is said to be free from those non-saccharine substances which make the extraction of beet and cane sugars such an expensive process.

Melton Mowbray Pies.—See *Pork Pies.*

Menhaden Oil.—A brown, thick, and fishy-smelling oil, obtained from the North American sea fish *Alosa menhaden*, allied to the ale-wife and shad. It is often used in making *soft soap*, in addition to, or as a substitute for linseed and cotton-seed oils, but it gives a fishy smell to the product, also a shiny appearance owing to the amount of unsaponifiable matter in it.

Meni Seed.—These are the oily seeds of the West African plant *Lophira alata.* It is known in Sierra Leone as "Laintlaintain," where, as also in Senegambia, the expressed oil is used for cooking and for anointing the hair.

Menos Wine.—An Austrian variety, red, rich, and highly flavoured. It is next to Tokay in celebrity.

Mercurial Soap or **Quicksilver Soap** (sometimes called *quicksilver plaster*).—This metallic soap is made from ordinary soap with 6 per cent. of mercurial ointment added. Used as a medicinal agent, or plaster, in skin diseases.

Meringue.—A French word for a kind of icing or delicate pastry made of white of egg and sugar, well beaten together. When cooked, whipped cream or jam is usually added.

Mescal, Mezcal, or **Mexical.**—A strongly intoxicating spirituous drink distilled from *Pulque* (which see). Mescal is a very popular drink in Mexico, and the liquor is consumed in large quantities by the natives, who call it "Vino Mescal," or "Aguardiente."

Large quantities are produced in the State of Oajac.

A superior quality called *Tequila* (Maguey Brandy) comes chiefly from a district of this name in the State of Jalisco, and is highly valued for its purity and strength.

Meslin Bread.—See *Maslin.*

Mess Pork.—See *Pickled Pork.*

Metal Polishes. — F. *Poudres et Pâtes à polir;* G. *Polir Pulver und Putz-pasta;* Sp. *Polvos y Extractos para pulir.* (See also *Plate Polish, Knife Powder*, etc.)

In no other class of goods has such extraordinary progress been made during the last dozen years as in the production of metal polishes. The trade in them has been completely revolutionised. Whatever virtues there may be in the older brands of other goods, the older makes of brass and metal polishes have been almost wholly displaced by cheaper and more effective polishes of recent invention.

As a modern typical formula:—Mix 2 parts finest powdered glass, 1 of putty powder, 2 of powdered pumice stone, 1 of oxalic acid, and crude oleic acid sufficient to make a stiff paste; or, take 4 parts finest powdered glass, 1 of ferric oxide, and a sufficiency of crude oleic acid to make a paste. Perfume as desired.

Powdered tripoli is used by some makers, and in the cheaper brands levigated flint is a popular ingredient.

Sheffield used to have a high reputation for its polishes, but even they have been quite distanced in public favour by their new rivals.

Special Firms.—Day & Martin, Ltd., London and Liverpool (see adv. near end of book); E. Mitchell & Sons ("Easy Mary" Polish), 5 Burnett Place, Bradford, Yorks; Paton, Calvert & Co., manufacturers, Leeds Street, Liverpool (see "*Matchless*" *Metal Polish*); R. J. Ll. Price, Rhiwlas, Bala, North Wales; C. Windschuegl & Co. (materials for), 1 Leadenhall Street, London, E.C.

Metallic Capsules.—These are the thin bright-coloured metallic covers fixed on the corks of bottles as an ornament and to prevent the cork drying. (The word "capsule" is also applied to egg-shaped or spherical vessels made of gum or gelatine in which nauseous drugs are sealed up for swallowing.) The name and trade mark, or other device of the bottler, are generally embossed on the capsules. The prices of Metallic Capsules vary according to size, the diameter of the bottleneck, and the depth to which the capsules are required to extend. Plain or uncoloured (that is plain tin colour), ornamented with a common device such as a bunch of grapes, lion and unicorn, ship, crown, etc., are the cheapest. Next are capsules of any single colour, yellow, green, claret, etc. The dearest are those with special trade marks in variegated colours.

How to capsule a bottle:—After the cork has been driven well into the bottle with a wooden mallet, shave off level the top of the cork close to the glass, then try on the capsule to see that it fits, next dip the bottle-top into a small pan of resin and oil melted to the consistency of cream. Do not plunge the bottle too deep into the resin, but only so as to cover the top of the cork. If after one dip any part of the cork appears uncovered, or any air bubbles burst through the resin, dip a second

time, then press the capsule tightly on with the palm of the hand, and wind a piece of cord once or twice round the capsule; draw the cord tight, and make it slide round so as to fix the capsule closely, smoothly, and evenly round the neck of the bottle. The capsule also protects the cork and contents from woodworms, borers, etc.

Metallic Cheese.—(See also *Margarine Cheese.*)—An imitation similar to Filled Cheese. Metallic cheese is a compound liberally fortified with crystallised sulphate of zinc, which enables a "round" of cheese to preserve for a long period a fresh and youthful appearance, no unsightly cracks and swellings appearing on its surface to excite the suspicions of timid buyers. The zinc preparation is known in the trade as "*cheese spice*"—a title as little warranted as it would be to call a handful of tintacks shrimp sauce or salad dressing, and it appears that in the district where the filled cheese comes from it is the practice of unscrupulous dealers to use metallic lead for the above purpose, a fact to which attention has also been directed. It can now only be sold as *Margarine Cheese.*

Metamah or **Millet.**—See *Dari.*

Methylated Spirits. — F. *Methylene;* G. *Holzgeist;* Sp. *Metilena.*

A mixture of one part of methylic alcohol (wood spirit), and nine parts of ethylic alcohol (spirit of wine). It weighs about 8lbs. 6 ozs. per gallon. Regulations were laid down by the Inland Revenue Board in 1891 under which every effort was made to render unpalatable all capable of being retailed, and methylated spirit before being sold has now to be mixed with a certain percentage of *paraffin.* Users wanting it pure must apply to their district supervisor for permission to purchase the spirit in quantity direct from the manufacturers. The applicant is required to specify the objects for which he purposes to use the spirit. If allowed, the applicant is then required to find a surety in a bond for £200 as a safeguard against the application of the spirit to any improper use. Our laws are, indeed, fearfully and wonderfully made; but this regulation has decidedly proved itself a mischievious innovation, and very awkward for scientific students, photographers, and others; it is considered to be poorly compensated by the small hindrance thrown in the way of desperate drunkards. Americans often ask for it by the name of "alcohol."

Cheap German and other foreign methylated spirit should be bought with caution, as they often cause irritation and inflammation of the eyes on account of impure distillation. A special licence is required for selling over a gallon at a time.

Metz Fruits. — The city of Metz, notorious in 1870 for its capitulation, with 50,000 French soldiers, to the German forces, is the centre of a very prolific fruit district, and the chief industry is the crystallising and preserving of fruits.

Metz has attained high excellence in this art. The fruits, variously assorted, are beautifully arranged in decorated fancy boxes, tins, and bottles from ¼lb. to 7lbs. each, and are justly celebrated, the world over, as "Metz Fruits."

Meursalt Wine.—See *Burgundy.*

Mexican Coffee. —(See also *Coffee.*) —The coffee industry has of late years begun to assume considerable proportions in Mexico, and the exports of coffee thence are now larger than those of any other article, save silver, and are increasing year by year as the new plantations, which are being formed all over the country, come into bearing. The sudden development of this industry is ascribable to the coincidence of the increase in the price of coffee in the United States with the decrease in the cost of labour in Mexico, together with the tempting offers to planters by the Mexican Government.

The conditions of climate and soil in Mexico, added to the cheapness of land and labour, are sufficiently favourable to an extended production, and to enable the product to compete profitably in foreign markets with that of almost any other country.

The export in 1895 was 334,059

cwts., valued at £4 3s. 4d. per cwt.

Nine-tenths of the total went to the United States, and the remainder was divided between Germany, France, and England.

In the Soconusco district, State of Chiapas, there are twenty-six coffee estates, which employ over 1,500 men. The cost of production is about 7 cents. per lb., packed in bags, and ready for transportation. The demand is always in excess of the supply, and sales are readily made at the plantations at 20 cents. per lb. Property is not very secure, but it is a healthy district, and as there is a very large extent of first-class coffee land obtainable on very favourable terms, it would seem a field well worth the attention of many young men who are overcrowding the retail shops in this country.

Mexican Hair Restorer. — This much-advertised compound appears to consist of about 4 parts precipitated sulphur, 1 part of lead acetate, 30 parts of glycerine, mixed with 160 parts of water.

Mexican Tea.—Obtained in Mexico and Columbia from the plant *Chenopodium ambrosioides.*

Mezcal. —See *Mescal.*

Mhowra Flowers. —See *Mahwa.*

Miel de Narbonne. — French for "*Narbonne Honey*," which see.

Mieng.—See "*Lao Tea.*"

Mignonette Pepper. — A fancy quality manufactured from a choice growth exported from Central India.

Mignot Cheese. — A French sort. About £10,000 is produced yearly in the department of Calvados, in Normandy.

Milan Cheese.—See *Italian Cheese.*

Milk. — Da. *Melk;* F. *Lait;* G. *Milch;* Ir. *Meilg;* It. *Latte;* Port. *Leite;* Sp. *Leche;* Sw. *Miölk;* W. *Llaeth.* (See also *Cream*, pp. 247 and 304; *Frozen Milk, Condensed Milk*, p. 290; *Humanised Milk, Sterilized Milk.*)

This bluish-white liquid is secreted by all female mammaliæ, and is the best type of a natural and complete food.

Under the microscope it appears a clear transparent liquid, in which a large number of round floating balls or globes of various sizes, about 10,000 to the inch, are suspended, each in a thin yellow skin of casein, and called *cream.*

It has been computed that in the United Kingdom there are four million dairy cows, producing a total milk supply of about fifteen hundred million gallons per annum, or, say, one cow, yielding about 400 gallons yearly, may supply each family of ten with milk, butter, cheese, and cream.

The main difference between human milk and cow's milk consists in the preponderance of albumen in the former, and more casein in the latter. Human milk is also more alkaline, while cow's milk is partly alkaline and partly acid. It contains a free saline matter and no spirit; but is inodorous and perfectly insipid, causing no pain even if dropped into the eye. To make cow's milk more like human milk, a little sugar and water, or, better still, milk-sugar should be added.

Cow's milk ordinarily yields from 12 to 24 per cent. of cream, human milk perhaps 3, mares' milk about 1 per cent., and asses' milk still less. In fact, asses' milk contains very little casein, is even sweeter than human milk, and thus being less fat, it is very easily digested.

Interesting experiments recently made from the successive milkings of five cows at the experiment station of New York showed that the first pint contained less than 1 per cent. of butter fat, viz., 0·85; the second, 1·40; the third, 1·68; the fourth, 2·05; the fifth, 3·27; the sixth, 2·65; the seventh, 3·7; the eighth, 4·05; the ninth, 4·86; the tenth, 4·48; the eleventh, 4·40; and the twelfth, or strippings, 5·23. The average of the whole of the milk was 3·21, or about the contents of the sixth pint. This shows the necessity

of careful milking, not only to secure the richest milk, but to prevent the cows going dry too soon.

Goat's milk is largely used in some countries in preference to that of cow's. The milk of carnivora is always strongly acid. Raw milk digests in a shorter time than boiled, hence, milk for the young and delicate should not be boiled, but merely warmed. Pure cow's milk also is often unsuitable for delicate or ailing infants.

Skimmed Milk or *Blue Milk* is milk from which not more than 63 per cent. of the fat, or *cream*, has been skimmed, or otherwise abstracted by hand, and consists mainly of water, a curd or cheesy substance called casein, and about 1 per cent. of milk fat. The skimming is effected by setting the new milk in open pans, or bowls, when the cream gradually rises to the surface.

Separated Milk is milk which has been "whirled" in a centrifugal apparatus, and by this latter process a far more perfect separation of the milk-fat is effected; only ·1 to ·5 per cent. of milk-fat being left in the milk.

There are several methods of estimating the value of milk-fat, but that known as Schmidt's is the best. The milk is simply boiled with strong hydrochloric acid, and the liberated fat extracted by ether.

Butter.—Churning the cream till it rattles like gravel or peas in the churn, breaks the thin coats of albumen, and causes the globules of fat to unite and form milk-fat, or *butter*, and the liquor remaining after the butter is removed is called *butter milk*.

Cheese.—If skimmed milk be left in an open vessel where it is warm, or if a little *rennet* be added to it, the remaining casein in the milk begins to coagulate and separate, the casein forming into little clots called *curds*, and when the curds are removed the very thin liquid then remaining is known as *whey*. The curds, with a little salt added, may then be put into an unbleached calico bag, drained, and afterwards pressed into the solid substance known as cheese; but cheese cannot be made from *sterilised* milk, because this will not curdle properly under the action of rennet. It requires, on an average, about 2½ gallons, or 25·5lbs., of milk to produce 1lb. of butter, but 9·8lbs. will yield 1lb. of cheese. Much, of course, depends on the breed and condition of the cows. Farmers say it pays them better to sell their milk at 6½d. per gallon than to make it into butter.

Both skimmed milk and whey form very suitable and wholesome beverages while fresh, even after the cream and the casein have been removed.

It is very easy for anyone with a lactometer (about 2/- each) to ascertain the quality of milk. The specific gravity of pure milk at a temperature of about 60°F. ranges from 1·028 in very poor milk to 1·034 in very rich milk. The mixed product of several cows should therefore equal 1·030 or 1·031. It is only necessary to float the lactometer in the milk to be tested, and notice the figures on the scale which are level with the surface of the milk.

But to verify adulteration analysts usually take a carefully weighed or measured quantity of the milk, and place it in a dish the weight of which is *exactly* known. It is then submitted to a steam heat, which dries up the milk—that is, expels the water. When dry, the weight is again taken, and the loss reckoned as water, the residue being termed the "total milk solids." These solids may then be soaked in ether, which dissolves out the fat, and the solids, now fat-free, after expelling any trace of ether by a short exposure to a gentle heat, are again weighed; the loss is the "fat," and the remaining substances in the dish are called the "solids not fat." These are now burnt, and a little grey ash is left, which is termed the "mineral matter," or "ash." The most important criterion is the amount of "solids not fat" which in milk from a healthy cow have never been noticed to fall below 9 per cent. So, if an analyst finds only 8 per cent., he multiplies 8 by 100, and divides by 9, which gives 88·8, proving, at least, 11 per cent. of adulteration.

The Adulteration Act itself appears to

have been put in force as to milk, subject to these definitions adopted by the Society of Public Analysts, and the chief tests analysts rely on thus appear to be the percentage of its fatty matter, and its non-fatty solids. The former averaging 2 to 6 per cent., and the latter, with some exceptions on either extreme, 8·2 to 10·8 per cent.

The "strippings" contain about five times as much fat as the "fore" milk. For a long time it was erroneously ruled that milk giving less than 9 per cent. of non-fatty solids was diseased or starved. The higher of the above qualities of milk would obviously bear 25 per cent. of watering, and still be equal to the poorer but still genuine milk, and it is, therefore, probable that most of the richer milks are, before being distributed to the public, reduced to the lowest standard that will pass muster, although the addition of water or the abstraction of cream are both considered adulterations if proved. It can hardly be ascertained by analyses whether a milk is naturally poor or has been diluted with water. One simple test is to make a stiff paste of 1 oz. plaster of Paris and a sufficiency of the milk, and allow it to stand.

With genuine milk it will, at a temperature of 60F., require 10 hours to harden; 2 hours denotes 25 per cent. of water, 1½ hours denotes 50 per cent. of water, 1 hour denotes 75 per cent. of water. Pure *skimmed* milk sets in 4 hours. One hour denotes 50 per cent. of water. Heat should not be applied.

The chief adulterants of milk have been water, skimmed or separated milk, cane sugar or starch to conceal watering, the addition of formalin, borax, or salicylic acid to milks likely to decompose, and, lastly, by the addition of glycerine. (The adulteration with brains is only a fable, which took its rise as far back as 1841.)

Milk adulterated with glucose or dextrine.—This fraud can easily be detected by means of a solution of iodine; if the sample contains the smallest quantity of dextrine it will acquire a red colour.

Poor milk is often coloured yellow with annatto, and occasionally with a coal-tar dye, to give it a fictitious appearance of richness. It has been found that boracic acid (glacialine) is often used in milk, to help it keep longer, and occasionally sugar or glucose, also colouring matter; but boracic acid in large or continuous doses being very injurious to health, its use is to be deprecated, especially in the hands of careless and ignorant milkmen, dairy-maids, etc. An ounce of powdered borax added to every four gallons of new milk will keep it sweet a considerable time; but if the farmer, and then the various wholesale and retail dealers, each add their modicum, there is no knowing how much the milk may contain before reaching the actual consumer. Dr. John Stevenson, President of the Society of Analysts, says that about 0·1 per cent. of boric acid, or 0·15 of borax, is quite sufficient to preserve a pint of milk for 24 hours, but that any excess is apt to retard digestion, affect the heart, and cause skin eruptions. Anyhow, the law seems to regard these preservatives as adulterations, and fines are frequently inflicted.

Milkmen sometimes find in summer that the morning's milk will sour, while that of the evening before is still sweet. The reason is, milk, when drawn from the cow, is at a temperature best adapted for bacterial growth. The night's milking is cooled overnight, whereas the morning's milking is poured directly into the cans, and the bacteria which entered it are well started on their growth before the nights' milk is warmed by the air. The immediate cooling of milk is thus of great advantage in preventing souring.

That there is a toxic agent in fresh-drawn milk may be readily noticed, for, if the warm milk be kept some time in a close-lidded can, without first cooling, a decidedly unpleasant odour may be noticed on afterwards raising the lid.

A process now used in London for the better preservation of milk has oxygen and carbonic acid gas for its basis. The milk, as soon as possible after it comes from the cow, is put into self-closing bottles, such as are used for aerated waters, and is subjected for a

fraction of a minute, whilst in a special machine, to the action of a mixture of the above gases at a pressure of several atmospheres. In the first instance, the bottles are completely filled, but, on being removed from the machine, they are left with a small space containing gas, whose pressure serves to retain the stoppers in place. This treatment has the effect of preserving the milk fresh for a considerable time, some samples being found to be quite sweet when examined 50 or 60 days after being bottled. Indeed, the contents of the bottles, after they had been opened, seem to remain sweet for a longer time than ordinary untreated milk. Thus, in one experiment, in which portions of new milk and preserved milk were placed side by side, the former went sour in three days, while the latter was fresh at the end of nine. The milk does not undergo any visible change, and no alteration is apparent in its flavour; and the inventor claims that all harmful bacilli is destroyed.

Milk, Preserved or Tinned.—See *Condensed Milk.*

Milk of Sulphur.—See *Sulphur.*

Milk Sugar.—See *Sugar of Milk.*

Millet, *Guinea*, or *Kaffir Corn.*—F. *Millet;* Ger. *Hirse;* It. *Miglio;* Jap. *Kibi;* Sp. *Alcandia; Mijo.*

Millets are a very small kind of grain, and there are several varieties: brown, red, white, and yellow, native of the East Indies, but also extensively cultivated in China, Africa, Southern Europe and other parts. (See also *Dari.*)

The plants are a sort of grasses or reeds, of the genus *Panicum.* There are two species, *P. miliaceum, P. Italicum,* and often called finger-grass, or guinea-grass. They rise with a reddish stalk 3 or 4 feet high, and the top of the stalk is terminated by a large loose pannicle, which hangs on one side, having a chaffy flower; and these are in turn succeeded by rugged sprays, or ears, crowded with seeds.

Millets contain 5 to 10 per cent. of nutritive matter, from 70 to 80 per cent. of starch, and 2 to 4 per cent. of fat, and are considered to be rather more nutritive than rice.

German or *Common Millet* is imported largely into England for cage-birds', game and poultry food. In Italy a coarse bread is made out of the species *P. Italicum.*

A West Indian species of millet, *Sorghum vulgare,* is the richest in nitrogen and starch; it grows to a large size, and is known as *Great Millet,* or "*Negro corn*"; in fact, as "cheena," "warree," "juar," or "jowarrie," it is the staple food grain in India, and not rice. It is the "*Dura Beledi*" of Upper Egypt. In Africa it is known as *Kaffir corn,* and in Unyamwezi, East Africa, the popular beverage is millet-beer, "Pombé," made without hops, but flavoured with honey and other condiments. In China millet is next to wheat in importance, and is grown in enormous quantities there.

Turkish Millet also is commonly known as the seed of *Sorghum vulgare.* (See *Sorghum.*)

Millet is used in Tartary for the preparation of a fermented beverage called "bouza," by pouring hot water over the fermented seed, and imbibing the infusion through a reed. Porridge is also made of millet in some parts of France.

Minced Collops.—Minced beef or meat of any kind, prepared and tinned in the United States. Collop is a very old word for a slice or small piece of flesh, and is still in common use in Scotland and North of England for "rashers" or slices of bacon.

Mincemeat.—This sells well in winter, and yields a large profit.

There is no official definition for mincemeat, and although the word is evidently a corruption of *minced meat,* many manufacturers leave out the "meat," or argue that there is meat in nuts and fruits as well as in the flesh of animals.

Subjoined are a few ordinary recipes:

(1) Peel, core, and chop up small,

30lbs. of apples, empty into a clean tub or earthenware vessel, and add 10lbs. of brown moist sugar, 5lbs. finely chopped candied peel, 10lbs. currants, 5lbs. minced sultanas, 1 oz. ground cinnamon, or best pudding spice, and a little essence of lemon; the latter must be used with caution, a very small quantity sufficing for a large batch of mincemeat.

(2) 8lbs. apples (pared, cored, and chopped), 4lbs. currants (washed and picked), 3lbs. raisins (stoned and chopped), 3lbs. mixed drained peel (chopped), 3lbs. parboiled lean beef (chopped), 3lbs. beef suet (chopped fine), 3lbs. castor sugar, 2lbs. sultanas (chopped), 1½lbs. ground sweet almonds, 2 ozs. mixed spice, ½ pint brandy, ½ pint rose-water, ½ pint lemon juice. Mix the solids thoroughly, then add the liquids, and again mix well; put the mincemeat in earthenware jars or pans, and cover with stout paper; tie down tightly, and keep in a cool, dry place. This mincemeat will keep good for many months.

(3) The following proportions will also yield an excellent commercial quality:—20lbs. currants, 20lbs. stoned raisins or sultanas, 30lbs. apples, 12lbs. beef suet, 28lbs. moist sugar, 3lbs. fresh lemons, ½lb. ground nutmeg, ½lb. ground cassia, and a pint of rum. Each ingredient should be finely minced separately and afterwards all mixed together. If kept, should be well stirred up once or twice a week.

(4) 3lbs. of stoned raisins, 3lbs. currants, 3lbs. beef suet, chopped fine, 1lb. of bread crumbs, ¾lb. mixed candied peel, 1½lbs. cooked fillet of beef, with salt, sugar, spices, and ginger to taste. Each ingredient to be chopped up separately and very fine. Mix all well together, and take especial care that the beef be well mixed with the other ingredients. Add a little brandy or rum and stir occasionally.

(5) 10lbs. apples (cored and chopped fine), 7lbs. currants (washed and picked), 4lbs. mixed drained peel (chopped fine), 3lbs. beef suet (chopped fine), 3lbs. brown sugar, 3lbs. raisins (stoned and chopped), 3lbs. sultanas (chopped fine), 3 ozs. mixed spice, 1 quart old ale. Rind and juice of six large lemons.

Chop the lemon rinds very fine, and after preparing the other dry ingredients mix all well; now add the ale and lemon juice, and work all thoroughly well; finally, store away in tightly covered earthenware jars.

Some makers put in sodium sulphite instead of the spirit, and especially when trying to make old mincemeat look like fresh made.

Mince Pies.—In the old days mince pies had to be made in the shape of a manger, and it was supposed that for every mince pie eaten at the Christmas season a happy month in the following year would be granted to the eater, which is all very fine to imagine, but we are more practical in these days, and rather incline to the notion that hot mince pies (like Charles Lamb's roast pig) are eaten for their own dear sake without any supernatural sauce.

Mineral Fat. — See *Petroleum Jelly.*

Mineral Waters. — F. *Eaux minérales;* G. *Mineralwasser;* Port. and Sp. *Aguas minerales.* (See also *Aërated Beverages.*)

Most of the true mineral waters are not beverages, but medicines.

There are two classes: *Natural* mineral waters, and *Artificial* mineral waters. It would occupy far too much space here to give a list of the names of the various kinds, let alone a description of their localities and reputed qualities, for almost every parish in every county in the United Kingdom has some famous water spring or well, and it is much the same in other parts of the world, especially in Germany and France. Many German princes and other nobles derive their chief income from the springs and spas on their estates.

Some of the waters, as in Silesia, are icy-cold, some boiling hot, as in Iceland. Analyses have been made of most of them, but these are not very reliable

because it has been found the waters change from time to time very considerably.

Readers who wish further information as to the host of waters in the market should read Tichborne's "*Mineral Waters of Europe*" (Baillière and Co., London), Watt's "*Dictionary of Chemistry*," Dr. Madden's "*Spas, and their uses*," Dr. Oliver's *Mineral Waters of Harrogate*," or they may obtain good descriptive booklets from Ingram and Royle, Ltd., and other wholesale dealers in the waters. Mineral waters may, however, be brought roughly under five general headings, namely:—

(1) *The Saline, Bitter, and Purgative Waters*, which contain much magnesium or sodium sulphate, as in the Hunyadi János, Pullna, Friedrichshall, Aesculap, etc.

(2) *The Alkaline or Antacid Waters*, which owe their virtues to carbonate or bicarbonate earths, with potassic or sodic carbonates, as at Bath, Buxton, Ems, etc.

(3) *The Ferruginous, or Chalybeate Waters*, containing iron either in the form of ferrous or proto carbonate of iron, or as a basic or neutral sulphate, Brighton, Matlock, etc.

(4) *The Sulphurous Waters*, reputed to smell like rotten eggs, owing to the presence of impure sulphur arising from the decomposition of organic bodies, as at Harrogate and Croft, in Yorkshire.

Potable Waters or *Table Beverages*, in which the therapeutic action is not sufficiently pronounced to be considered a medicine, yet the continued use of these may affect the health beneficially or otherwise, and the medical man is the proper person to determine the point.

It is their carbonic aëration which keeps them sweet and renders them exhilarating, while any mineral carbonates present give them a desirable mildly antacid medicinal character.

It is only the water itself makes them beverages; and their dissolved solids do not, like those of tea, contain any stimulating principle, nor like those of milk a nourishing principle, but they are composed of useful, yet distinctly medicinal substances.

Many natural mineral waters spring forth of a warm, and sometimes almost boiling, temperature. This is accounted for by the action of underground springs and streams penetrating certain mineral deposits. The water also itself becomes impregnated with the saline substances, which react on each other.

The artificial production or imitation of mineral waters, containing similar proportions of their various constituents, is a somewhat complicated matter, and requires a thorough chemical knowledge and efficient machinery; but these will keep good a much longer time than the natural waters themselves. In fact, many of the latter speedily decompose in bottle, and this renders their claim to be *natural* mineral waters more than doubtful.

The artificial waters should, however, be made either from distilled water, or irreproachable drinking water, but many ignorant or reckless manufacturers use impure well or river-waters, if near at hand. The carbonic acid should also be pure, and they should be aërated to the right degree. It is also important that all beverages containing carbonic acid should be kept from contact with lead or copper vessels, unless well tinned, as they quickly dissolve poison from these metals. They keep best when the bottles are laid flat and in a cool place, say 57° to 60° F.

The artificial production of mineral waters was first invented in 1780, by Mr. Thomas Henry, a chemist in King Street, Manchester; but they were not manufactured on a commercial basis till about 1800.

Mineral Water Salts.—These are specially manufactured after careful analysis of the natural springs, and are intended for the use of mineral water manufacturers and bottlers. The following are commonly sold at prices varying from 1/6 to 4/- per lb.:—Carlsbad, Cheltenham, Fachingen, Frederickshall, Harrogate, Kissengen, Kreuznach, Pullna, Seltzer, Vichy, etc.

Mineral White.—See *Soapstone*.

Mineraline.— A name used in North Carolina for a finely powdered earth or soapstone, used in the adulteration of flour, and to the extent of 12 to 15 per cent. The makers claim that it is "non-injurious," and produces whiter and nicer flour. The stuff is offered at about £4 a ton.

Mint.—See *Spear-mint*, *Pepper-mint* and *Pennyroyal*, also *Dried Herbs*.

Mint Vinegar. — Put into a wide-mouth bottle, fresh, nice, clean mint leaves, enough to fill it loosely; then fill up the bottle with strong vinegar, and after it has been corked close for two or three weeks it is to be poured off clear into another bottle, and sold well corked, for use with lamb when fresh mint cannot be obtained.

Mirabelles.—G. *Mirabellan*.

These are a yellowish green species of small plums originally from Mirabeau (Lower Alps) somewhat resembling olives, sweet to the taste, and containing very little acidity. They are sold crystallised and glacé in fancy boxes, also bottled in syrup, and mostly come from France and Germany.

They are commonly grown on the roadsides in the North-East of France for distillers. Immense quantities are grown and preserved about Metz in Lorraine.

Mirbane, or Nitrobenzine.—Discovered by Collas, and made by treating benzone with nitric acid. It has an odour resembling bitter almonds, and is largely substituted for it in perfumery, in confections, hair oils, etc. Apply to C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Mistletoe.—See *Christmas*, p. 231.

Mixed Pickles. — F. *Variantes, Achar;* G. *Englische Essigfrüchte*. (See also *Pickles* and *Dutch Vegetables in Brine*.)—English mixed pickles consist of cauliflower, onions, gherkins, and French beans, put up in vinegar, and flavoured with a little pickling spice. The fresh vegetables should first be cured in salt and water, and after a few days, or months, may be taken out of the brine, well washed in cold water, and drained. They should next be cut up and filled into the bottles or jars, the onions having all loose skins removed. When a bottle has been filled with vegetables, the latter should be covered with clean cold water, then immediately turned upside down, and left two or three hours to drain.

The bottle is finally filled up to within an inch or so of the top with vinegar of lightish colour. A little pickling spice is added, and then the bottle is corked, resined and capsuled, polished, labelled, and wrapped in paper. The vegetables employed should be crisp—not soft, nor yet tough or fibrous—and the stronger the vinegar the better.

In large factories the "fillers" are usually females, who must have considerable teaching and practice before they can fill properly. Anyone can, of course, cut up vegetables into small pieces and fill the jars or bottles in random style, but these bottles would neither look well nor sell well in shops. Each piece of vegetable has to be put in and fixed (by the aid of a smooth stick) in its particular position, so as to display it to the greatest advantage and conceal the stalky ends by hiding them either in the middle of the bottle or at that side which is eventually to be covered by the label.

An examination of any particular brand of pickles will show that every bottle is filled in exactly the same way; an onion here, another there, and separated by a particular shaped piece of cauliflower or gherkin, with one or two French beans or a long red capsicum tastefully displayed at full length in the foreground, and thus giving to the filled bottle a sort of front, sides, and back. Pickle fillers have to learn for two or three years before they can do it properly. In fact, it is quite an art, and clever hands are pretty sure of constant work at fair wages.

In filling "best mixed," about six dozen pint bottles are considered a fair day's work, but nine or ten dozen of the common or cheaper sorts. The "finishing"—that is, the filling up with vinegar, spicing, corking, capsuling, labelling, polishing, and wrapping—is simpler

work, and is performed by other hands. For *best mixed* pickles the finest quality of cauliflower, and without much stalk, is used; the gherkins and beans are young and tender, and the onions small, tender, and uniform in size, but for the commoner and cheaper pickles, the later seedy and stalky cauliflower is generally used, also larger gherkins or cucumbers, spotted, crooked, or otherwise inferior; the beans often old and fibrous, and the onions large and perhaps soft. The vinegar also is probably weaker. Indeed, most pickling vinegar is made of commercial acetic acid one part, with five to eight parts of water, and coloured to fancy. Some say this suits best.

To make a superior spiced vinegar for Mixed Pickles, Gherkins, Onions, or Cauliflower, take the following proportions:—1 gal. good malt vinegar, 6 ozs. black peppercorns, 4 ozs. sliced ginger, 1 oz. chillies and cayenne pods, 1 oz. garlic cloves. Boil the spices and garlic gently in half the vinegar for half an hour, strain through a hair sieve, and add the rest of the vinegar to the spices, and strain again. To the remnant spices add 2 ozs. salt and 1 pint of water, and boil for half an hour. After removing from the fire add 1 pint of vinegar, and again strain into the spiced vinegar, which when perfectly cold is ready for use.

Mixed Spice.—See *Pudding Spice, Pickling Spice, Savoury Spice, Curry Powders, Dried Herbs*, etc.

Moabi Seed and Oil.—The tree is a real giant of the African equatorial forests. It is especially abundant in the valley of Kouilon (French Congo State) and in the forests traversed by the road from Loango to Brazzaville. It belongs to the *Sapotaceæ*, and its trunk attains a diameter of 8 or 10 feet, 6 feet from the ground, without branching till it reaches a height of 100 feet. The bark is unusually thick, sometimes 6 inches, and contains a latex which yields quantities of guttapercha. The seeds are about 2 inches long, 1½ inches wide, and an inch thick. They contain under the brown skin a kernel formed by two fleshy cotyledons filled with oil, while the embryo is full of latex. The oil is present to the extent of 45 to 50 per cent. of the kernel, and of 30 to 35 per cent. of the whole seed. Determined attempts are being made by the French authorities to exploit this oil.

Mocha, or Mokha Coffee. — A name acquired by the best Arabian growths, large quantities of which were formerly shipped from Mocha or Mokha in the province of Yemin, Arabia. There is really no coffee now grown in the immediate vicinity of Mocha, which is, in fact, only a small town in a sterile plain, the shipment of Arabian coffee being long ago transferred to the more southerly ports of Aden, Lokeia, and Hodeida. This most esteemed of all coffees was the first sort introduced into England, and that was in 1652, by one Daniel Edwards, London.

The two varieties best known are the *Long Berry*, and the *Short Berry*, or *Alexandrian*. They are both somewhat small, the former is greyish-yellow in colour, and gives a rich mellow liquor, the other is smaller and of a pale greenish-yellow tint, and the infusion is much the same as the other, but cleaner and more delicate. Beans of quite brown colour are often noticeable among both sorts, and much of it is of the sort known as "Pea-berry." Mocha Coffee, doubtless, owes much of its peculiar merit and commercial value to the dry, rainless seasons of Arabia, which favour its curing for markets.

There are upwards of 10,000 tons exported every year, but, unfortunately, very little of the genuine article comes to this country, and much of the coffee styled and sold as Mocha is really grown in India, Africa, and Brazil—very rich and mellowy flavoured selections, no doubt, but not equal to the true Arabian product. These imitations have hitherto been obtained by a careful grading and assorting of the small berries produced from the tips of Brazilian and Indian plantations. The larger yellow growths of Java and East India are often actually sent to Arabia and thence re-shipped as genuine coffee of the district. In British Central Africa, where the richest land

can now be bought at 2/6 to 5/- an acre, and where adult labourers can be hired at 3/- to 4/6 per month, without food, the real Mocha species of coffee is being planted very extensively, and is said to thrive best at an altitude of 900 to 3,000 feet.

Mochara. — A so-called "Coffee Improver," consisting of old figs roasted and powdered, and afterwards to be mixed with ground coffee or coffee and chicory. It is intended to fine the beverage, heighten the colour, and improve the flavour. Offered for sale in tins or packets at about 1/- per lb.

Mock Brawn.—See *Brawn*.

Mock Turtle Soup. — Port. *Falsa de tartaruga*

An imitation of *Real Turtle Soup* and considerably less expensive. This popular soup, prepared either thick or thin, is generally composed of stewed or baked calf's head, lean ham, onions, mushrooms, shalots, force-meat balls, a little flour, and rich ordinary veal and beef "stock," seasoned with sherry, orange, and lemon juice, cayenne, mace, and a little sugar. Sometimes green peas, asparagus tops, French beans, etc., are added. Inferior sorts are often made of pig's head, cow-heel, etc.

Mohwa, or Mhowra Flowers.—A valuable produce of an Indian tree, *Bassia latifolia*, more than half their weight being pure sugar. These fleshy snow-white flowers are produced in enormous quantities in March and April. When they fall and cover the ground beneath the trees thousands of tons are gathered eagerly by the natives, and the corollas are eaten either raw or cooked by the wild tribes of Central India and in parts of Bombay, Rajputanâ, and Bengal. The ripe flowers have a sickly smell and a sweet taste resembling Manna; but when dried they have an odour and appearance not unlike Sultana raisins. The flowers are sometimes bruised and boiled into a jelly, and made into small balls, also put into sweetmeats. They are also distilled by the Parsees, and yield a powerful, coarse spirit. (See also *Mahwa*.)

Molasses, or Melasses.—F. *Sirop de Sucre, Mélasse;* G. *Syrup;* It. *Mielazzo di Zucchero;* Port. *Melassa de azucar;* Rus. *Patoka Sacharnaja;* Sp. *Miel de Azucar, chancaca.*

Molasses, or more properly *melasses* (from *mel*, honey), is a name for various dense viscous fluids, separated during the manufacture of sugar—cane or beet—and varying in colour from light yellow to black, and which no boiling can bring to a consistence more solid than syrup.

One kind is the thick brown liquid which drains from the crystallisable or granulated portion of raw moist sugar, when first extracted from the cane, before shipment.

Although the words are often used synonymously, molasses is a much coarser production than *treacle* or *golden syrup*, which are obtained only during the refining of sugars. The ordinary sorts of molasses met with in the markets are:—Demerara, St. Lucia, Berbice, Trinidad, Barbadoes, Antigua, Mauritius, and Foreign West Indian.

The name "Molasses" is also applied to other vegetable juices of similar character, such as *Maple Molasses*, etc. The molasses obtained in making beet sugar is, however, indissoluble, very disagreeable to the taste and smell, and cannot be used so generally as that which is drained from cane sugar. It is mostly used in the manufacture of tobaccos, cattle feeding, etc., but is sometimes refined and mixed with glucose for human consumption.

Artificial molasses and syrups are apt to contain *stannous chloride* and traces of copper. The chloride being employed in making Demerara crystals, and the copper probably derived from the copper pans and coils used in evaporating the juices. They contain about 20 per cent. more water than moist sugar; but if the flavour be not objectionable they are equally good.

Apply to—The Pure Cane Sugar Co. (J. Philip & Co., agents), 4 Fenchurch Buildings, London, E.C.

Molasses Mull. — A new feeding-stuff made in Germany for cattle, horses,

sheep, and pigs. It consists of raw molasses, containing about 50 per cent. of sugar mixed with "mull" or peat dust. This dust is obtained from turf taken from the upper strata of high-lying peat moors, and consists largely of the dried but non-decomposed fibre of the *Sphagnum cuspidatum* and the *Eriophorum latifolium*. The acids contained in this moss-turf, more especially the humic acids, neutralise the salts of proteine of potassium held by the molasses and render them harmless, the action of the mull being to counteract the severe purging which would be caused by the molasses alone.

Momeca. — See *Bhang*.

Monastene.—A celebrated liqueur made at the Abbey St. Gratien since A.D. 1512, retailed in ½ bots. at 2/6.

Money, Weights, and Measures. —See *Appendix*.

Monkey Nuts. — See *Coker-nuts*.

Monkey Pepper. — The seeds of the pods of *Habzelia ethiopica*, used in tropical Africa as a condiment and to flavour soups, medicines, etc.

Mont-d'Or Cheese.—A kind made from goats' milk, very popular around Lyons; the market centre being the little town of St. Germain-au-Mont-d'Or.

Monte Fiascone Wine.—An aromatic and intoxicating kind, made near the Lake Bolsena, in the Roman States. It is also known as "Est, Est," in allusion to a German bishop who drank himself to death.

Montilla Wine.—A very fine kind of dry sherry, grown or matured at Montilla, near Cordova, in Spain, but is nearly all consumed in the same neighbourhood.

Mop.—F. *Faubert Lavette*.

A utensil composed of a knot or collection of cotton cords fixed on the end of a pole, and used for washing the decks of boats, flagged yards, pathways, cellars, etc.

Mora Nuts. — These nuts (*Mora excelsa*, or *Dimorphandra mora*) from British Guiana are occasionally put on the London markets as Kola nuts, but they really contain no caffeine, and it is not known whether they possess any economic value as food.

Morocco Wines.—These are chiefly made by Jews, from grapes, palms, etc. They are mostly very light, and acid, and will not keep. In Tetuan a wine is made very closely resembling Spanish sherry. *Embeth* is prepared in Cacongo, *Pali* and *Pardon* in Benin.

The Kaffirs make a wine called *Pombie* from millet or Guinea corn. In Congo, a wine called *Mélasso*, is very popular, but it will only keep two or three days.

Morrison's Pills.—(See also *Patent Medicines*.)—One kind appears to consist merely of aloes and cream of tartar, and the other of aloes, cream of tartar, gamboge, and colocynth.

Mortadella.—F. *Mortadelle*.

This is the Italian name for a celebrated large kind of sausage, made at Bologna and Florence, from the lean flesh and small cubes of fat of pigs which feed on the chestnuts and acorns in the surrounding forests. It is seasoned with wine, garlic and spices, and is highly popular everywhere in Italy, where it is usually sold enclosed in skins, not unlike Rugby footballs in form, and covered with tinfoil.

A few years ago the Fratelli Nanni began to put it up sliced, in ¼lb., ½lb., and 1lb. tins, of crescent or half-moon shape.

The meat is of the finest flavour, and the lean parts having been thoroughly beaten or ground up into a pulpy mass before filling it into the skins, allows it to be beautifully sliced when cold, ready for immediate use as sandwiches, etc. The tins, being closely sealed, preserve the slices in splendid condition for a long time, and they may be opened in an instant by the key attached to each tin.

Mortadella is becoming a great favourite with English and American ladies and gentlemen, both at home and in the Colonies. It is largely used by hotel keepers and other public caterers, owing to the great convenience it offers for the rapid and inexpensive manu-

facture of tasty sandwiches, the meat being divided, by steam machinery, into slices of exceeding thinness.

The best is imported by C. Prevet & Co., 134 Fenchurch Street, London, E.C.

Moselle Wines.—A highly-esteemed variety of clear, wholesome, dry wines of pleasant musk-like, or elder-flower flavour. Produced in Lorraine on the banks of river Moselle. These wines have a general resemblance of flavour with hocks and Rhine wines, and are often sold as such, but they will not keep so long, and do not taste quite so acid. They possess about 6 per cent. of absolute alcohol.

The most valuable are those known as *sparkling* Moselles:—

Scharzhofberg, Grünhaüser, Rheinberg, Muscatelle, Brauneberg, etc. They are nearly all made from unripe grapes, and professedly almost equal to champagne.

Of *still* Moselles, there are Scharzberger, etc. Winninger and Zeltinger are cheaper qualities.

Moselle wines are usually plentiful and cheap, often being sold as low as a penny a bottle in the neighbourhood of their production.

Moss Bunkers.—See *Anchovies*.

Moss Litter.—See *Peat Moss*.

Mosses and Sea-weeds.—See *Balderlochs*, *Carrageen*, *Ceylon Moss*, *Dulse*, *Iceland Moss*, *Irish Moss*, *Jaffna Moss*, *Laver* or *Sloke*, *Lichens*, *Murlins*, *Reindeer Moss*, *Rock Moss*, *Tangle*, *Tree Moss*, etc.

Mostachiola.—A variety of *Italian paste*, of brownish colour, and in thick pipes, cut in pieces diagonally, 2 to 4 inches long, and usually retailed at 5d. or 6d. per lb.

Mostarda.—A preserve made in Italy of fruit boiled in the lees of wine.

Mother of Cloves.—F. *Anthofles*, *Clous matrices*.—These consist of large ovoid purple berries, not unlike young damsons, the unripe *fruit* of the clove tree. They are shaped like olives, but smaller, and contain one or two seeds, with the odour and taste of the young flower buds commonly known as "cloves," but in a milder degree, consequently not of much value.

Mother of Cloves in a preserved state are often imported for medicinal purposes; they are reputed to be stomachic and anti-spasmodic.

Mother of Vinegar.—This is the "vinegar plant," known as *bacillus xylinus*, and formerly known as *flowers of vinegar*, a cellulose substance produced by an organism closely resembling the *mycoderma*, but differing in the possession of the distinctive property of producing this jelly-like substance from either dextrose, lœvulose or mannite.

This so-called plant was by Pasteur, in 1864, discovered to be merely an acetic ferment, a microscopic fungus belonging to the group of micro-bacteria, which is the agent for the production of vinegar in wine, cider, etc., by the oxidation of alcohol.

A piece of it put into a vessel of sugar and water, and left in a warm place, will in a few days soon ferment it, and turn it into a weak vinegar, but if the fermentation is allowed to continue after the whole of the alcohol has been transformed, then the acetic acid or sour principle itself falls a prey to the oxidising power of the plant, and is converted into carbonic acid and water. (See *Sugar Vinegar*.)

This mass of microbes also acts very injuriously on any good vinegar, quickly neutralising all the sharp acidity so necessary, and rendering the best vinegar tasteless as dirty water. Any cask, jar, bottle, or other vessel in which it has once formed should at once be discarded, it is so difficult to get rid of it.

Mother Seigel's Operating Pills.—These appear to be simply made up of aloes, ginger, senna, and capsicum, coated with French chalk and gum. A box contains about twenty-nine pills, varying from 3 4-5 grains to 5 4-5 grains each, although the average dose is stated to be three pills. They may be made at the rate of a penny a boxful.

Mother Seigel's Syrup. — The active ingredient is merely *Aloes*, of which 120 grains is contained in a 4 oz. bottle; it also contains treacle, borax, cayenne, and liquorice.

Motor Sauce.—See *Sauces.*

Mottled Soap.—This is generally made of coarse, inferior tallow and refuse kitchen stuff.

Its mottled, or marbled, appearance is given to the soap while in a semi-liquid condition by incorporating a solution of either ultramarine blue, the ordinary red oxide, or yellow ochre.

The original object in doing this was to show that such soap did not contain an excess of moisture, or the colouring matter would sink to the bottom and remain there. This is why mottled soap does not lather so freely as yellow soap, and is therefore considered more economical.

The main art in making it is to have the soap mass and the colour solution in just such a state that the latter does not separate out too much, nor, on the contrary, mix too well with the soap, so as to produce a uniform colour throughout; and for this reason it is only the above colours that can be easily used in producing mottled or marbled soap.

Mould Candles. — (See also *Candles.*)—These were introduced as an improvement over "dips." Being moulded in pewter moulds, they are more shapely and handsome, and, instead of being made wholly of tallow, beeswax, ozokerit, paraffin, and spermaceti are used in their manufacture; also plaited wicks instead of straight ones. The pewter moulds, being hollow cylinders the length of the candle required, are open at both ends, but provided at the upper end with a conical cap in which there is a hole for the wick. A number of these moulds are inserted in a wooden frame or trough, with their heads downwards; the wick is then drawn in through the top hole by means of a wire, and kept stretched while the moulds are filled by running the melted material from a boiler into the trough.

Moulmein Rice. — (See also *Rice.*) — Sometimes spelt *Maulmain*, and takes its name from the seaport town in India, on the Eastern side of the Bay of Bengal.

Mountain Tea.—The dried leaves of *Gaultheria procumbens.*

Mountain Wine. — A rich, sweet variety, produced in the Malaga district. (See *Malaga Wines.*)

Mount Hymet Wines. — These are fairly good and honest wines, of both red and white colours. Produced in Greece.

Moussache. — See *Arrowroot.*

Moutarde a l'estragon.— A celebrated German mustard, made from black mustard seed, mixed with tarragon vinegar and a little salt.

Mowra. — See *Mahwa* and *Mohwa.*

Moyen or **Moyens.**—French words, meaning "medium" or "middle-sized."

M'pogo Nuts. — These are imported from the Gaboon, West Africa, and are about two inches long by one and a half in diameter. Each fruit contains three or four small, roundish seeds, from which a very large percentage of oil can be expressed.

Muffins, Crumpets, etc.; also *Pikelets, Girdle* or *Griddle Cakes, Light Cakes*, etc.

The making of these used to be a special branch of business, as special stones had to be erected and set in brick, but any baker may now make them by the aid of one of the gas muffin stones, which are clean, instantaneously heated, and portable. The following are a few popular recipes:—

(1) Muffins: Put 1½lbs. of flour into a basin, add 1 oz. of yeast made into a sponge, and a pinch of salt; let it rise, then form it into a very soft dough with half milk and water, let it rise in the basin, and beat it smooth; get ready a tray, spread it with flour about 2½ inches in depth, make impressions in the flour with a smooth breakfast cup, take portions of the light dough

out with a large spoon, and put them into the flour impressions to rise; make the muffin-stone hot, let them cook on it for a few minutes, pass the palette knife under, turn them over on to the other side and bake likewise, keeping them of a light colour.

(2) One gallon of warm water (say, 100° Fahr.), 2 oz. of French or German yeast, 3 oz. salt, ½lb. potatoes, and 10lbs. sifted flour. Beat well together, then let it stand an hour and a half, and beat again well. Use about 2 oz. of this batter for each muffin.

(3) For Crumpets, also known as *Pikelets, Light Cakes, Girdle Cakes*, etc.—Set a sponge with, say, 1 quart of milk, in the usual manner. When sponge is ready add milk enough to reduce it to a thin batter, which is done by beating in the milk, adding, of course, a little salt; when beaten fine and smooth pour it into buttered hoops on the hot stone or muffin-plate.

(4) To each quart of sweet milk add two eggs, well beaten, a lump of butter half the size of an egg, and flour enough to make a batter; stir in half a pint of yeast; let them stand until perfectly light, and then bake in an oven in tin rings.

(5) Make a batter with 2¼lbs. of flour to about 1 quart of milk, 1 oz. of yeast sponge, and half a teaspoonful of salt; when mixed smooth and well risen, have the stone hot and slightly greased with margarine, place the crumpet hoops (also slightly greased) on the stone, drop a spoonful of the light batter into each hoop, cook sharply, pass the palette knife under and turn quickly over, slightly brown on both sides, rather under than over done. They will only take a few minutes to do.

It should be remembered that the batter for crumpets, etc., should always be a little thinner than for muffins.

Mulberries.—F. *Mûres;* G. *Maulbeeren;* Port. and Sp. *Moras;* Sw. *Mulbar.*

The berries or fruit of a tree of the genus *Morus*. There are numerous varieties which grow wild in Asia Minor and in parts of Persia. The black species, *Morus nigra*, is the only one worth cultivation in this country for its wholesome and refreshing fruit.

It is a native of Persia, and the Romans preferred it to every foreign fruit. The first trees grown in England were introduced in 1548, and planted at Sion House. The tree is hardy, milky-juiced, and belongs to the same natural order as the fig and the common nettle.

In England the fruit ripens from the middle of August to the beginning of October; colour red, changing to a blackish purple; juicy, sugary, with a slight acidity, and very agreeable.

When thoroughly ripe, used at dessert dished on their own leaves, but more generally in pies and puddings if red and unripe. In South Lambeth many of the old gardens contain one or more trees since the time of Alexander Pope, the poet, who received large quantities in the shape of presents from Holland, and distributed many among his Lambeth neighbours; and about Southampton there are many, owing to the endeavour of Sir Walter Raleigh in Queen Elizabeth's time to introduce the silk worm, when that gallant freebooter imported a number of mulberry trees from the South of France and Italy. The fruit, as the united product of clusters of flowers, is often produced in very large profusion, and falls off the tree when ripe, but will only keep fresh a day or two. It has the form of the common bramble or raspberry, is of a purplish black colour, and contains dark, sweet juice, with an agreeable acidity, and a fine aromatic flavour, very cooling and wholesome. The raspberry and the mulberry look very much the same, but a short examination will show how different they are, for, while in the former the calyx remains quite distinct from the fruit, in the latter it gets united with each of the little fruits, and forms part of it.

The *white mulberry* tree, *Morus alba*, is a native of China, and is mostly cultivated for its leaves, which are the only kind now considered good as food

for the silkworm. Its fruit, of yellowish-white colour, is not prized so highly as the other varieties.

Red Mulberries (*Morus rubra*) are an American sort, of large size and very delicious flavour. Mulberries are much esteemed for dessert, are slightly laxative, and are occasionally preserved, besides being made into mulberry wine, or syrup for coughs and colds; it is largely employed in France for colouring wines. Mulberry jam is said to be very useful in sore throat and affections of the chest.

Mulligatawny Soup. — F. *Soupe de l'Inde* (sometimes spelt *Mullagatawny*, Tamil for *Pepper-water*).

This is the name of a celebrated East Indian curry soup, usually prepared from ordinary "stock," meat or fowl, to which a liberal quantity of curry-powder is added, also a little bacon, carrots, turnips, herbs, lemon-juice, salt, and cayenne.

A quantity of soup under this name is prepared and tinned in the United States. The process is as follows:— Seventy-five lbs. of carrots are cut (by hand or machine) into small pieces; 25lbs. of white turnips are prepared in the same way. Peel and cut into thin slices 15lbs. of onions, cut 15lbs. leeks into small dice, and cut up fine 10lbs. lettuce.

In the 2lbs. cans put 6 ozs. of the mixed vegetables, and then fill the cans to the required weight with soup, which is made as follows:—Take 60 gallons of good clear beef essence, taken from the roast beef shrinking or cooking tanks, and boil down in a jacketed kettle to half its bulk. To this is added 40 gallons of good clear jelly or soup stock made from the boiling of fresh beef bones after the meat has been removed from them. For flavour and seasoning, add to the above mixture 4 gal. mushroom catsup, 4lbs. fine salt, 15 ozs. white pepper, 3 ozs. mace, and 6 ozs. curry powder. All the ingredients must be thoroughly mixed in the jacketed kettle and boiled for one hour. While boiling, the soup must be well stirred. After the soup has been cooked the required time, it is drawn off into a tight box truck of ample capacity, from which it is convenient to fill the cans. Fill the 2lb. cans, so they weigh 2lbs. and 1 oz., which extra weight will allow for loss and evaporation. In canning soups, always allow one ounce for loss and evaporation in processing.

When the cans are filled, they are wiped well and capped, leaving the centre vents open. They are now placed on the racks and put into the retort. The cover of the retort is closed tightly, and the exhaust must also be closed. On the first processing they are given one hour and 45 minutes at two pounds pressure.

When the required time has elapsed, shut off the steam and blow off the pressure very slowly. The retort is then opened, the cans removed, and the vents stopped quickly. The cans are then replaced in the retort, and boiled off for 1 hour and 40 minutes at 9lbs. pressure. While boiling off, the exhaust of the retort is left open. After the cans have remained for the required period, the steam is shut off and the pressure is again blown off; the cans are removed to the shower-room, and there showered until thoroughly cool. They are then removed and sent to the cleaning-room, afterwards being wiped, dried, and labelled.

Mum. — Da. and G. *Mumme;* Du. *Mom.*

A popular German beverage made of the malt of wheat, seven bushels, with one bushel of oatmeal, and a bushel of ground beans, or in the same proportion. This is brewed with sixty-three gallons of water and boiled with fir-rind, tops of fir and beech, and a variety of herbs, till one-third is evaporated.

Mum was formerly much drunk in England, but its use at the present day is chiefly confined to Germany, and to Brunswick more particularly.

Munster Cheese. — G. *Munsterkase.*

A German make, the centre of production being around the little town of

Münster, in Alsace. The cheese is soft, made in square form, and has a fair reputation.

Muriatic or Hydrochloric Acid.—This acid (HCl) is usually prepared by heating common salt and sulphuric acid. The gas is purified by being passed through water, and is then collected either by displacement, if a gas is required, or passed into water if a solution of aqueous acid is required. Hydrochloric acid (to give it its proper name) is really a colourless gas, 1·269 times heavier than air. It fumes strongly in damp air, combining with the moisture, and has a strong reaction. It is very soluble in water, one volume of water at 15° dissolving 454 volumes of the gas, and this is the form it usually takes in commerce. It is employed in several cheap biscuit factories, but for obvious reasons its use is to be deprecated.

Murlins. — A species of seaweed (*Aliara esculenta*) often used as human food in Ireland.

Muscadine Wines. — F. *Muscat, Muscadin, Muscadet;* It. *Vin Muscato;* Port. and Sp. *Moscatel.* (Also known as *Muscadel* or *Muscatel* Wines.)

These are appellations given to a variety of strong and sweet wines made from muscat grapes.

The best of these wines, produced in France, are those of *Rivesaltes* and *Lunel*, then *Frontignan* and *Montbazin.* Of Italian, the best are the Syracusan, Moscata, Giro; and the muscat of Alghieri and Oleastra, in Sardinia. A South American muscatel wine, made in Chili, is also considered an excellent product.

Muscatels, or Muscat Raisins.—These are considered the finest quality of raisins produced in Europe, and derive their name from the species of grape used, which has a strong odour or flavour of musk.

The best muscatels come from Malaga, in Spain, and are usually left to mature, shrink, and dry on the stalk, which is partially cut through, after the branches have been detached from the vine and the leaves removed, so as to leave the grapes exposed to the sun.

To help this the grapes are carefully turned from time to time, and covered at night with matting to preserve their bloom. To give them a glossy appearance, and render the skins soft and flexible, it is customary to dip the grapes in a lye of wood ashes and barilla, with olive oil and a little salt, and then to redry them. This alkali also removes the waxy covering which retards the drying. When dry they are carried in baskets to the packing sheds. Here the inferior or damaged grapes are cut off with scissors, the grapes being handled as little as possible for fear of injuring the bloom. The bunches are afterwards looked over a second time, and pruned of the smaller grapes, thus becoming what are called "firsts."

Then having been slightly flattened with the hand and scissors, the bunches are laid in the boxes on white paper, three layers in each box. As the fruit is still almost round it is packed loosely, so that the topmost layer is above the sides of the box. These muscatels are generally of very large size, and of a beautiful appearance. The first and second prunings are next examined, and all sound raisins, however small, are collected and packed loose, without stalks, to be sold at lower prices.

The pressing is done by placing the boxes one on top of another, and the contents sink down in the course of a few days to the proper flatness. The boxes are finally ornamented with coloured paper, lace work, and pictures, and are ready for exportation. The new fruit reaches England in September. A very choice kind, if not the choicest, of dessert raisins is the Chilian, but it is scarcely known in this country.

Muscatels being packed between sheets of paper, as above stated, they are often called "layer raisins," These fruit, however, have latterly been also cultivated in Valencia and shipped from Denia, and these are now accepted by the trade with little prejudice. The loose ones are supposed to be packed in

boxes of 22lbs. nett, half boxes of 11lbs., and quarter boxes of 5½lbs., also trays of 5lbs., but these are only "reputed" weights. They may be the correct weights when freshly packed, but they lose weight in keeping. As with "figs" and certain other articles they usually appear exceedingly fine at top, but often very loose and poor underneath.

At one of the dried fruit sales held in London, November, 1896, there was one lot of muscatels in three trays, which for beauty and excellence far outmatched anything that had ever previously been seen in the trade.

One tray contained six or seven pounds of fruit in a whole bunch on a single stem—a rarity seldom met with; the other was filled with "clusters" on two stems; and the third tray consisted of muscatels in "layers" of enormous size, almost resembling fine imperial plums, full of bloom.

This fancy parcel was sold at the fancy price of £25 10/- per cwt., probably for "fancy" purposes, but good muscatels can now be retailed at about 6d. per lb.

Muscovado Sugar. — A Spanish name for the common, dark-coloured, raw, and unpurified cane sugar exported from East and West Indies and other parts of the tropics.

Under this denomination come Mauritius syrups, Java black stroops, and Manilla or Taal sugars.

When the canes are crushed, the juice is collected, and slowly heated to nearly boiling point, a little hydrate of lime is added, which clears it, and after being skimmed, it is subjected to a greater heat till sufficiently concentrated by evaporation. It is next cooled in shallow pans and put into casks with holes bored in, to allow most of the uncrystallisable portion (molasses) to drain away. What remains in the cask is what we call raw sugar, Muscovado, or "open pan" sugar.

The above coloury cane products are not so commonly met with now as formerly, but they are still sought after for British wine-making, fruit preserving, and brewing purposes by manufacturers, who prefer and insist upon having sugar of absolute purity and sweetness.

Owing to the great dearth of supplies, most of them, instead of being procurable under the hammer in Mincing Lane, are often only obtainable by private treaty, and actually fetch higher prices than the lower grades of crystallised.

About half of the sugar crop of Trinidad comes to England as "Muscovado."

Special Importers. — The Pure Cane Sugar Co. (J. Philip & Co., agents), 4 Fenchurch Buildings, London, E.C.

Mush. —A kind of porridge made by boiling ground maize; very popular in the United States, also in Italy as "*Polenta*." (See also *Maize Bread*.)

Mushroom Ketchup. — (See also *Ketchups*.)—This sauce or condiment is sometimes spelt *Catsup*, or *Catchup*. It should be made of common mushrooms, *Agaricus campestris*.

The mushrooms should be gathered in dry weather or the Ketchup will not keep.

Examine and wipe the mushrooms, but do not wash or peel them. Place a layer of them in a panmug or tub and sprinkle salt upon them, then keep adding another layer of mushrooms and another of salt till three parts full. Each gallon of mushrooms requires half a pound of salt. When they have stood 24 hours mash the mushrooms well up in the brine that will have formed. Stand the vessel in a cool place for three days, stirring and mashing the contents every day. At the end of this time strain the mushrooms through a sieve or coarse bag, measure the juice and boil with spice, say, 2 ozs. ground ginger, 2 ozs. ground pimento, ¼ oz. ground mace, and ¼ oz. ground cayenne to every gallon of juice. Let it boil and simmer for an hour, stirring constantly. Let it cool, and then bottle, cork, and seal. Exposure to the air soon injures the flavour and necessitates reboiling, with a little fresh spice.

Any unpleasant odour the mushrooms or the juice may have developed before boiling will go off.

When the salted mushroom juice,

without added water, is thus boiled with spice only, the product may be honestly called "pure" ketchup, but in order to cheapen the article, water and salt are always more or less lavishly added, and much of the so-called mushroom ketchup offered to grocers is undoubtedly made from *boiled liver*, water, salt, and spices. A small proportion of mushroom may or may not have been added. (See *Ketchups*.)

Large quantities of salted pigs' livers for this purpose come to England from Ireland, but, of course, it is only by an abnormal stretch of courtesy that the product can be called "Ketchup," and to sell the stuff as *Mushroom* Ketchup would be a finable offence. The retailer should have a guarantee with his purchases.

Ketchup is apt to lose strength and acquire a bad flavour in a few weeks after it is first made, but re-boiling with a little ground pimento will make it keep good again for a long time.

Apply to Charles Cocks & Co., Reading.

Mushrooms.—F. *Champignons;* G. *Schwamme* (*Morcheln*); Port. *Champinhœs;* Sp. *Setas;* W. *Bwyd y barcud.* (See also pp. 201 and 331.)

Mushrooms are found in all parts of the known world, and are usually of very quick growth. The Chinese and Japanese use immense quantities, and in Tierra del Fuego the natives live largely on the species known as *Cytharia Darwinii*. There are hundreds of varieties of mushrooms, the commonest type in England being that known as the *Agaricus campestris* and the coarse Horse mushroom, which are gathered in the fields during September and October.

Many species deserve to be placed beside meat as sources of nitrogenous nutriment. They contain from 20 to 35 per cent. of protein, against the 8 per cent. in bread, the 10 per cent. in oatmeal, and the 5 per cent. in potatoes.

The Giant Puff-ball (*Lycoperdon giganteum*), the Edible Bolete (*Boletus edulis*), the Orange-milk (*Lactarius deliciosus*), the Morel (*Morchella esculenta*), the *Fairy-ring mushroom*, the *Scotch bonnet*, and the French "Mousserons" (*Marasmius oreades*) are all well known. These latter are very small, but highly esteemed for their savoury qualities. They grow abundantly on meadows, downs, lawns, etc., and are generally in large circles of several yards diameter, popularly called "fairy rings." These rings are marked by short grass, as on a footpath, and many superstitions prevail in different country districts regarding them. Scientific men, however, say that the grass fades because of the mushroom fungi enveloping its roots, and so prevents its absorbing moisture, or otherwise affecting its growth.

Indoor mushroom culture in sheds and cellars is now carried on extensively in several districts, the largest in this country being probably that leased by a potato merchant in the disused railway tunnel at Edinburgh.

The artificial cultivation is very simple, and is becoming quite fashionable. Mushrooms will grow in any cool shady place (in an outhouse in the winter), but the temperature should be fairly uniform, and not below 45° F.

"Champignon" culture in France is, however, made quite an important and an exceedingly interesting industry. In France mushrooms have a very large consumption, and are widely cultivated. The annual crop is valued at £400,000, and it is said that there are sixty wholesale firms in Paris dealing exclusively in them. In the department of the Seine it appears there are some 3,000 caves in which mushrooms are grown; and about 300 persons are employed in their culture, and rarely leave these caves. The beds cultivated in the caves are frequently miles in extent. A cave at Mery is mentioned as containing, in 1867, 21 miles of beds, and producing not less than 3,000lbs. in weight daily. Another at Frepillon contains 16 mile of beds. The catacombs and quarries of Paris and vicinity, and the caves of Moulin de la Roche, Sous Bicêtre, and Bagneux produce immense quantities all under Government supervision, and are regularly inspected like the mines.

The mushroom caves at Montrouge are quite a wonder. They are something

like the shallow coal mines of our own country, but are very difficult of access. A writer in describing them, says:—"Although we are from 70 to 80 feet below the surface of the ground everything looks very neat—in fact, very much more so than could have been expected, not a particle of litter being met with. A certain length of bed is made every day in the year, and as they naturally finish one gallery, or series of galleries, at a time, the beds in each have a similar character. Once more we plunge into a passage, dark as ink, and find ourselves between two lines of beds in full bearing, the beautiful white butter-like mushrooms appearing everywhere in profusion along the sides of the diminutive beds, something like the drills which farmers make for green crops. When I state that there are six or seven miles' run of mushroom beds in the ramifications of this cave, and that their owner is but one of a large class who devote themselves to mushroom culture, the reader will have some opportunity of judging of the extent to which it is carried on about Paris. These caves not only supply the wants of the city above them, but other countries also, large quantities of preserved mushrooms being exported, one house alone sending to England more than 14,000 boxes annually."

They grow every day of the year, each day producing a new crop or growth. The beds bear in about three months after planting, though cultivators divide them into four seasons—autumn, winter, spring, and summer beds. The temperature of the caves varies but little in summer or winter, and only climatic influences—that is to say, a very dry or very wet season, more than one of heat or cold—tend to affect the daily production of the beds.

The mushrooms are gathered every morning, trimmed, washed, and sorted according to size and quality preparatory to marketing.

SPECIES OF MUSHROOMS.

Those that are to be preserved are sent to the factories for canning or bottling, where they are again washed in salt and water, selected, and separated according to quality, and then slightly cooked before being closed up. After the tins have been closed and soldered, they are boiled again, in order that they

may be more perfectly preserved. But mushrooms are never washed in salt water unless for preserving purposes.

These small varieties of mushrooms, *Agaricus arvensis*, the Horse mushroom, or Snow Ball, are especially suited for drying, powdering, and bottling, for flavouring stews or sauces, on occasions when the fresh mushrooms are not available. (See p. 331.)

Japanese Mushrooms. — In Shikoku Island, where most of the camphor is produced, the cultivation and export to China of mushrooms is very remarkable.

One edible species, called *Shütake*, is the most popular. Oak trees, 25 to 33 years old, are felled in the autumn and incisions made with axes at intervals of three or four inches, the incisions generally reaching the woody layer. The trees are then cut into logs of 4 to 10 feet in length, and left in dark secluded parts of the forest.

After the third year mushrooms make their appearance in the incised portions. When the growth lessens they are replaced by new logs.

The mushroom grows at each season of the year—winter, spring, summer, and autumn, but the growth in winter and spring is the result of artificial stimulus. The logs are steeped in water for a number of hours, according to the dryness of the locality, and then struck with pommels or axes to facilitate the growth of the mushrooms. The autumn crop is the largest. After being collected, the mushrooms are dried either by the sun or by artificial heat.

Mushrooms have to be cultivated by methods almost scientific if paying results are to follow. But that is true of almost all crops. It does seem odd that the supply of an article of consumption like mushrooms, which is regarded here as a luxury and a delicacy, should be dependent on accidental circumstances rather than any definite plan. There may be a fortune for someone in mushrooms yet.

Although there is only one variety of the "ring" mushroom poisonous, and that *A. dealbatus*, which may easily be known by its nasty odour and its turning greyish-brown in its zones when soaked in water, as also by its fine, narrow, crowded, and dingy-white gills; yet there are numerous other poisonous kinds, and not always of rank odour or bitter taste. Fatal cases of poisoning by fungi are not at all infrequent, and greater care than is ordinary in this country should be taken to ascertain whether a fungus is or is not poisonous before using it or selling it for food. In many continental towns inspectors are appointed to examine all mushrooms brought to market. At the same time a much larger proportion of mushrooms are edible than is generally supposed. Several species which are really nutritious and dainty articles of food are ignorantly rejected in this country, a prejudice having grown up concerning them which will take some time to eradicate. Mushrooms, however, should only be gathered and used under the guidance of persons of long practice and experience.

There are no certain rules by which the edible and poisonous sorts may be distinguished, but here are a few general characteristics which may help.

Edible kinds:—1. Grow solitary in dry, airy places.

2. Generally white or brownish.

3. The gills vary in colour from salmon-pink to brown or nearly black.

3A. Have compact brittle flesh.

4. Do not change colour when cut, by the action of the air.

4A. The stalks should be thick and frilled.

5. Juice watery (not milky).

6. Odour agreeable when fresh.

7. Should peel easily.

8. Taste not bitter, sour, salty, or astringent.

Poisonous kinds:—1. Grow in clusters, in woods or at tree roots, and in dark, damp places.

2. Often of bright colour, and with scales or spots on their surface.

3. Flesh tough, soft, and watery.

4. Acquire a brown, green, or blue tint when gathered and exposed to the air, or are cut or bruised.

5. Juice often milky when cut.

6. Odour commonly powerful and disagreeable.

7. Have an acrid, astringent, acid, salt, and bitter taste.

8. The gills or flakes which radiate from the centre often of unequal length.

A bulletin issued by the United States Department of Agriculture, 1898, says: —The beginner who does not know fungi but wants to eat them should:—

1. Avoid fungi when in the button stage, also those in which the flesh has begun to decay, even if slightly.

2. Avoid fungi which have stalks with a swollen base, surrounded by a sac-like envelope, especially if the gills be white.

3. Fungi with a milky juice are dangerous, unless the milk is reddish; also those which have a sort of spider-web or flocculent ring around the upper part of the stalk.

4. Avoid those in which the pileus (expanded disc) is thin in proportion to the gills, and in which the gills are nearly all of equal length, particularly if the pileus is bright coloured.

5. All tube-bearing fungi should be avoided in which the flesh changes colour when cut or where the mouths are reddish; and in case of other tube-bearing forms caution is necessary.

The artificial growths near large towns are often raised from masses of decomposed filth just topped by a slight covering of soil, and the noxious vapours which arise are absorbed by the mushrooms, the result being a poisonous fungi almost certain to cause either vomiting, diarrhœa, or colicky pains, if not death itself.

An extra precaution against poisonous mushrooms is to cut them up, soak them an hour in vinegar, and then wash them in boiling water. This gets rid of any injurious properties they may possess.

English mushrooms—cup or button (the latter chiefly used for garnishing and pickling)—are sold wholesale in punnets by green-fruit merchants.

Price in June, 12/- to 14/- per dozen punnets. French mushrooms, "*Champignons de Choix*" (selected), graded as firsts, seconds, and ordinary, are usually imported in wooden cases, each containing 2lb., 1lb., or ½lb. tins, and fetch about 12/-, 8/-, or 5/- per dozen respectively.

Mushroom stalks ("*Queues de Champignons*") are sold in 1lb. and 2lb. tins, about 4/3 and 9/- a dozen.

Musk.—Ar. and Per. *Mishk;* Du. *Muskus;* F. *Musc;* G. *Bisam;* It. *Muschio;* Rus. *Muscus;* Sp. *Almizcle, Musgo.*

Musk is one of the most common and lasting of all perfumes. It occurs in both the vegetable and animal kingdoms. Everybody is familiar with the *garden musk plant*, and beet has a musky odour; then there are two species of plants which grow on the slopes of the Himalayas, one at the great altitude of 17,000 feet, which smells strongly of it.

The seed of the plant *Abelmoschi arana*, grown extensively in the West Indies, Egypt, and other parts, also yields this perfume, but that of Martinico is accounted the best seed. That from Bengal is of poor quality, and that from Russia still worse. In France and Italy seeds yielding an odour precisely similar to musk are employed with success in the composition of several species of perfume, and formed also into necklaces and bracelets, and other toys for the use of children.

Among animals there are the musk beetle, cuttlefish, duck, shrew, mole, rat, ox, and deer, which have more or less of this special odour. The musk-rat (*Mygale moschata*), however, and the musk-deer are the only animals which secrete the substance in a special receptacle from which it can be easily obtained. The rat has it in the tail.

The best musk is obtained from a deer which is found in Central Asia, in the loftier mountains, from the Himalayas to Pekin, at elevations above 8,000 feet, and especially near Lake Baikal. It principally comes to us from China, where it is called Che-Kiang, "Che" being the name of the animal and "Kiang" meaning perfume. The male deer, a small hornless animal about the size of a sheep—distinguished as *Moschus moschiferus*—has two long and slender teeth, which project from the upper jaw with an inward curve, in the form of tusks. It is much sought after during spring and summer on account of its musk pouch, a small abdominal bag or

gland. This is cut off and dried by the peasants, when the contained substance appears like coagulated or dried blood in a granular form, and weighs from a quarter of an ounce to two ounces. This is the purest and best musk, and gives out such a powerful smell that it becomes exceedingly disagreeable if not confined, kept at a distance, or weakened by the addition of other substances. The best musk is from a deer five or six years old.

Cabardine, or *Siberian musk*, which fetches only 8/- to 10/- per oz. in the pod, is from another species of musk deer called "Kubaya," probably *Moschus Sibericus*, in India.

In 1881 China alone exported 2,503lbs. of this granular musk, packed in small chests or boxes of 60 to 100 ozs. each, and valued at £44,501, or nearly a guinea an ounce.

Thibet and Annam are the chief musk producing districts, and Canton the great port of shipment. Chinese musk is often adulterated with ammonia. The pods also are often opened, and after removing part of the contents resewn. They are also damped so as to weigh more.

About 7,000 ozs. of inferior quality are exported annually from British India, and a still baser sort from Russia. The finest comes from Tonquin, and is worth 80/- to 100/- per oz.; while large quantities of inferior qualities (often adulterated with blood, leather, etc.) come from other countries.

In the East musk is held in great repute for its medicinal properties, being one of the most powerful anti-spasmodics known. But it is, *per se*, a very popular perfume, remarkable for the diffusiveness and persistency of its scent; in fact, this is so fixed and permanent that at the end of several years it seems to lose no part of its pungency if kept closed from the air. The odour of the musk mixed with the mortar used in building the mosque of S. Sophia, at Constantinople, over 1,000 years ago, is still very perceptible. Everything in the vicinity of musk is also apt to catch and retain its odour, and for these reasons it is not a desirable article of cargo on ships that carry anything intended to be used as food. Mixed with highly volatile vegetable scents, it gives them greater permanence, and its principal use is thus to develop, fix, round off, amalgamate, or blend with other perfumes, as in confectionery, tobacco, etc., and it should be noted that this has an extraordinary capacity not possessed by artificially-produced musks, such as those made from oil of amber, resin spirit, anisol, and cresol derivatives.

Of late, owing to the expensiveness of musk and to its being so much adulterated by dealers, what is called *American musk* comes into considerable use as a substitute for the superior kind. This is obtained from the musk-rat, a small beaver-like rodent, millions of which are killed annually for their skins, which are made into cheap furs. The musky secretion obtained from this creature has proved an excellent substitute for true musk in the scenting of toilet soaps. If a cake so perfumed is retained for a month it would require a very skilful perfumer to distinguish the odour from that of the best Tonquin. It is also used in the cheaper essences, although here the result is not so satisfactory.

Musk has also been found adulterated with cinnabar, ground coffee, etc.

Being an article of high value and so very easy to falsify, it is safest to buy it from merchants long established and honourably known.

Musk Soap.—F. *Savon au Musc.*

This fancy toilet variety is usually made of white tallow soap and pure palm oil.

The perfume consists of 50 parts of oil of bergmot, 5 of roses, 5 of cloves, and 10 parts of pounded musk.

Musquashes.—The musquash root, botanically known as *Claytonia Virginica*, belongs to the order *Portulaceæ*, and was introduced into this country in 1854, as a substitute for the potato, but, so far, has not succeeded.

Mussels. — Da. *Musling;* Du. *Mossel;* F. *Moules;* G. *Muschel;* It. *Nicchio;* Port. *Mexilhao;* R. *Rakushka;* Sp. *Almeja, Mejillon;* Sw. *Mussla;* W. *Cregyn gleision.*

These are a very common species of

bivalved (two shelled) fish, known as *Mytilus edulis*, of which there are many varieties, both in fresh water and salt water.

They are often termed the "poor man's oyster," and are cultivated in the Thames, Medway, Lune, Exe, and other estuaries, but perhaps the finest and most extensive beds are those now under preservation in Boston Deeps. There are also very large mussel beds on the coast of France, near Rochelle, and in Holland, where the mussel fisheries engage many thousands of people.

found. Mussels should be carefully examined before eating to see they be fresh, and no putrefied dead ones among them. It is also advisable to boil them ten minutes with a little carbonate of soda. To prevent the taking of undersized mussels, the Sea Fishery Committee of our County Councils have fixed the 2¼ inch gauge as a limit, and anyone fishing or dealing in mussels under this size is liable to fine or imprisonment.

Many tons are annually used by fishermen as bait for whiting, haddock, and

MUSSELS.

The French system of culture appears to be worthy of imitation in this country. It certainly produces specimens of a size, succulency, and delicacy of flavour almost incredible.

The shells or equivalves are three-cornered, greenish-black on the outside and a purple-white on the inner side. The fish itself is of a light yellow colour, but is not so digestible as the oyster.

Frequent cases of mussel poisoning have occurred, and the precise cause does not appear to be known, unless it arises from the stagnant or polluted water in which these shellfish are sometimes

cod. Mussels are very largely used as food in France, and in sauces, stews, soups, etc., but are not eaten in America nor in Scotland.

Mussels are usually sold by measure. About 500 make a peck.

Must. — The raw, unfermented juice of the grape as first expressed, and before it is by fermentation converted into wine.

Mustard. — Ar. *Khordal;* Da. *Senep;* Du. and Sw. *Mostert, Senf;* F. *Moutarde;* G. *Senf, Sanfte;* Hin. *Rai;* It. and Port. *Mostarda;* Pol.

Musztarda; Rus. *Gortschiza;* Sp. *Mostaza;* W. *Mustardd.*

The English word, mustard, was derived from the Italian *mostarda,* owing to an ancient custom of having a little must (Latin, *mustum,* unfermented grape juice) mixed with it in preparing the condiment.

For centuries the English have been known as great mustard eaters—the greatest in the world. An Englishman may almost be identified by his liberal use of it, although it has been said that, perhaps, after all, there is not so much really eaten as there is left on the edges of plates!

The use of mustard, powdered in its present form, for making into a paste, originated in Durham, about the year 1720, where it was prepared on a small scale by an old lady named Mrs. Clements, who kept the secret of its manufacture to herself—grinding the seed in a mill and sifting it—for several years. She used to travel twice a year to London and the principal towns in England for orders, and from this arose the name and fame of "Durham Mustard"; but the best and finest qualities now made are the *Genuine Imperial* and *D.S.F.* (double superfine). The modern "Durham" is a poor mixture. In manufacturing mustards the white, or black, or mixed seed is ground to powder, and then put through an elaborate course of sifting. The product that remains in the first sieve is called *dressings,* and that which passes through is impure *mustard flour.* This is submitted to a finer sieve, and separated into a second quantity of dressings and pure mustard flour.

Mustard oil is afterwards expressed from the dressings.

It is calculated that upwards of 7,000 tons of mustard are now manufactured yearly in England, and in no other part of the world is its preparation carried on so energetically, two or three of the leading English firms sparing neither trouble nor expense in producing, by the aid of most elaborate machinery, the best possible article.

As showing the extraordinary enterprise displayed in this industry, one well-known old firm, that of Keen & Co., London, who have been making mustard nearly 200 years, give away large sums in prizes to the growers of the best English mustard seed, besides paying much higher prices for the product than others pay for foreign mustard seed.

The result is that the best makes of English mustard are popular all the world over, and that more English-made mustard is now exported in a single year than there is of foreign manufactured mustards imported in twenty years. (See *French Mustard.*)

Mustard is manufactured of several strengths or qualities, and from a mixture of different kinds of seed, white and brown, and with or without the addition of other ingredients, such as wheat-flour, turmeric, cayenne, etc. Every firm has, of course, its own particular formulas, but some English makes being of light yellow colour, it may be assumed they are made from mixtures in which *white* seed preponderates. This white seed, *Sinapis alba,* yields a much larger percentage of flour than the dark brown or black variety, *Sinapis nigra,* and is much cheaper.

But although a mustard may be made from ground white seed principally, and even keep good for a fair length of time, also be sold at a low price, yet such mustard is necessarily very deficient in true piquant flavour, because it is the *brown* or *black* seed only which possesses the volatile myronic oil yielding this esteemed flavour.

Now ground mustard made from dark seed with this oil left in will not keep good long owing to variations in temperature, exposure to air, etc. It soon causes fermentation, cakes the powder, turns it rancid, bitter, and unfit for use; hence any kegs, tins, or other packages, with discoloured paper linings or wrappers, showing oil stains within or without, should always be rejected as stale or out of condition. The oil is, in fact, a source of great trouble to manufac-

turers who wish to sell a pure mustard in powder, of good flavour, and, at same time, one that will keep good.

The *white* seed contains practically none of the volatile myronic oil (*sinigrin*) of the *black*, but an acrid substance known as "sinalbin," which again is but slightly present in black seed; but of these two active principles the volatile oil is by far the most important, and the dark seed is, therefore, the more valued. Hence, also, the reason of manufacturers mixing the two kinds of seed, for although the white seed possesses very little pungency, yet it has within it the peculiar ferment which develops the pungent flavour of the black, and, therefore, the art of producing the best mustards seems to depend on the judicious mixture of the proper proportions.

The difficulty is practically avoided by mixing wheat flour with the powdered mustard. This farina absorbs most of the fixed oil, and retards fermentation, decomposition, and rancidity, and makes the mustard keep longer.

Most of the English makers now sell two classes of mustards, one comprising mustards of different qualities, but all pure, and the other class a set of mixtures called "mustard condiments" or "mustard compounds," of various strengths. The best mixed mustards now preferred by consumers are really stronger than many grades of the pure mustards, and are mostly made from brown seed, and in which the oil is neutralised or absorbed by the other ingredients—flour, etc., as, in fact, has been officially done in the Government Victualling Yard at Deptford, where rice flour, pepper, and capsicums have been always used. The Government has now relinquished the manufacture, but they used to make it of about 37 per cent. of brown and 50 of white mustard flour, with 10 per cent. of rice flour and 3 per cent. of black pepper and a little Chili pepper. It also contained ginger.

Besides its culinary uses, ground mustard is largely employed medicinally, as an emetic in cases of poisoning, in preparing external poultices, making drenches for cattle, etc., and with hot liquids like milk, etc., it assists perspiration. In these cases it becomes important to know what quality or strength of mustard is to be used. The doctor should obviously determine this, some qualities of mustard being three or four times the strength of others by the same manufacturers.

The fresher and oftener manufactured mustard is stocked the better.

It has long been a custom with some manufacturers to rush orders in August for mustard under the pretence of its being "new season's," and many grocers give orders in advance under the impression they are obtaining the current year's growth, while all the time they are getting the previous year's mustard; for it is necessary for mustard to remain stacked for at least two months to properly mature, so the crop harvested in August is not fit to thrash before October, or the flavour and colour will be very inferior.

Gardner's Patent "Rapid" Sifter and Mixer, freely used for above. Prices from 50/- to £100. Catalogues from Wm. Gardner & Sons, Engineers, Gloucester.

Leading Mustard Manufacturers.—Barringer & Co., Ltd., Rock Valley Mills, Mansfield, Notts; Hedley, Gamble, & Crosfield, Circus Street, Liverpool; Keen, Robinson, & Co., Ltd., Garlick Hill, London, E.C. (Estd. 160 years); Sadler, Firth, & Ross, Ltd., 26 Great Guildford Street, London, S.E.

Mustard Leaves, Mustard Paper, Mustard Plasters. — Mustard leaves and mustard papers are sinapisms, usually consisting of paper, coated with a mixture of mustard and gutta-percha in solution, so as to form an adhesive plaster or *sinapism* for counter irritation.

Mustard "leaves" are perhaps the most convenient, but not the most desirable, although they are sold ready for use, only requiring to be first dipped in warm water.

Rigollot's mustard leaf seems to be made by spreading moistened mustard on paper, and then drying.

Mustard Plasters are generally better made with equal quantities of ground mustard-seed, and either wheat-flour or linseed meal. They are usually applied between old linen, and for 10 or 15 minutes, if tolerated so long. They are very powerful rubefaciers, and seem to act in same manner as blisters of Cantharides.

Not everybody knows that a mustard plaster made with the white of an egg will not leave a blister.

Mustard Seed. — F. *Graines de Sénevée*; G. *Senfkoerner*; Port. *Semhilha de Mostard*; Sp. *Pepita de Mostaza.*

The principal kinds of mustard seed are the white (*Sinapis alba*) and the black or brown (*Sinapis nigra*); other varieties are *Sinapis arvensis* (*Charlock*), wild mustards, and an Indian sort known as *Sarepta* mustard seed. The English grown is by far the best. Many thousands of acres are under cultivation in the counties of Lincoln and York for brown seed, Cambridge and Essex for the white. Downham, in Cambridgeshire, is a great centre for mustard seed. In August South Lincolnshire and North Cambridgeshire are usually resplendent with masses of the bright yellow bloom, but sometimes broken with a slight dinginess, in the event of a wet, unfavourable season. The plant, growing about 2 feet high, is hairy, and has sweet-smelling flowers, and the yield is about three quarters to the statute acre; *four* would be an exceptionally good crop. The value of *white* is usually 9/- to 11/- a bushel, and of brown or black, 13/- to 15/-. A quarter weighs about 448lbs. The dark-coloured seed (*S. nigra*) is the most valuable, and is the chief sort used in making the table condiment. It contains the essential oil of mustard, which white seed does not. (See *Mustard.*) This plant is smooth, and has smaller flowers, pods, and seeds; in fact, these are scarcely half the size of white mustard seeds, and are yellow inside. It attains a great size in some parts; in Palestine, for instance, it grows 10 or 15 feet high, and is supposed to be the mustard tree referred to in Luke xiii. v. 19. Mustard seed is quite inodorous when dry, and even powdered, but when triturated with water exhales a strong pungent odour so as to affect the eyes.

Over a thousand tons of the dark East Indian *rai* seed, known as *Sinapis juncea*, are imported every year, and sold as black mustard, or *Sarepta*. Large quantities of Dutch seed, both black and white, are also imported from Holland, though always inferior to that of English growth.

A considerable quantity of the cheapest mustard seed enters into the composition of pickling spice. Some is also sown for growing the well-known "mustard and cress," a stimulating *spring salad*. It grows very readily, but this latter piquant adjunct is much more popular in France and Holland than here, although such salads are exported to this country every winter.

Ordinary English mustard seed contains about 28 per cent. of myrosin and albumen, 35 per cent. of fixed oil, about 16 per cent. of woody fibre, 5 per cent. of moisture, and 5 per cent. ash. Black mustard also contains about 5 per cent. of myronic acid and 3½ per cent. of acrid salt; while *white* mustard contains no myronic acid, but about 11 per cent. of acrid salt. White mustard seed is sometimes made whiter in colour by a roasting process at the pepper mills.

Mustard-seed Oil. — This is the excessively pungent and irritating liquid obtained from mustard seed, and is the essential oil, or pungent principle, to which mustard owes its taste and its inflammatory action upon the skin. It is chiefly found in the bran or skin of the seed, and not in the inner or floury portion. The oil is usually obtained when the seed is wetted and fermented.

When the flour of brown mustard seed (which contains a substance known as myronic acid, with potash (*sinigrin*), and another body called *myrosin*) is moistened

with cold water, the myrosin, which seems to act as a kind of ferment like diastase in malt, re-acts upon the myronite of potash, and at once develops the volatile oil of mustard, a mere drop of which applied to the skin raises a blister in a moment. As with the flour of mustard, so with the oil; it only undergoes this chemical change and acquires this remarkable fiery pungency when a certain quantity of water is added. The oil pressed from the dry seed, black or white, without fermentation, is of quite a bland character, very like rape oil, and possesses no pungency whatever, and it is not till water is added that it assumes its peculiar irritating qualities.

Mustard-seed oil only begins to solidify at a temperature of 9° to 10° C. It is largely used as a lubricant for machinery, and has often been found beneficial in stubborn cases of rheumatism. In Germany it has long been used as a condiment, and is principally prepared for this purpose at Ilversgehofen, near Erfurt.

Mutton.— See *Australian Tinned Mutton*, *Frozen Meats*, etc.

Mutugo Seeds. — The seeds of *Myristica angolensis*, native of Angola. They are about ¾ inch long and ½ inch broad, also ruminated like a nutmeg, but have no aroma and very little or no taste. They contain about 75 per cent. of fatty oil, and were first imported into Liverpool as oil seeds in 1884.

Myrabolanes (variously spelt: *Myraballams*, *Myrabolams*, *Myrobalans*, etc.). — The myrabolans of commerce consist of the dried and wrinkled fruits of four varieties of *Terminalia*, viz., the Chebulic (*T. chebula*), the Citrine (*T. citrina*), the Beleric or Bastard (*T. belirica*), and the Emblic (*Emblica officinalis*).

These bitter droops, or plums, or "Country Almonds" as they are called in the East, are something like cherries or sloes, to which latter they are, in fact, closely allied. They are usually rather larger than almonds, and grow prolificly in many of the mountains in India. The shrub itself is blood-leafed and bears a profusion of early white flowers. They are known in the United States as *cherry-plums* and Myrabolane plums.

Myrabolane stones used to be employed in medicine on account of their great astringency, and the citrine kind, or hard-nut, is still prepared in many parts of India as a confection; but in England, myrabolane stones are mostly imported for dyeing, tanning, ink-making, hair-restoring, etc. They arrive chiefly from Bombay, where they are sent from the forests of the Central Indian provinces, and the trade in them has a lively interest for Nabob speculators. They may be bought both whole and ground. Price, f.o.b., 4/6 to 6/3 per cwt.

Myrobalanti, Creme de.—A French liqueur, so named from its being a preparation of the myrabolan nut or its kernel.

Myrrh.—F. *Myrrhe.*

A pleasant smelling gum-resin with a sharp, bitter, and aromatic taste. It was used as medicine in the time of Solomon.

The myrrh tree, from the bark of which it exudes in oily drops of reddish-yellow colour, is a kind of balsam, a small scrubby shrub, with green flowers and very little foliage, growing in Arabia, Persia, Abyssinia, and Africa.

Most of the myrrh imported into England comes from Aden or Bombay, in chests of 2 to 4 cwts. each. It is used in medicine as an astringent tonic, to dress wounds, sore lips, etc., also in the manufacture of incense, perfumery, tooth powders, etc. It is hard, dry, and glossy, of various shades, and intermixed with whitish specks or tears, transparent like agate, or opaque like pitch. The best is that of reddish-brown colour, neither very yellow nor too dark, uniform on the outside, and internally specked or streaked with white; clear and bright, somewhat unctuous to the touch, but not so tenacious as to stick to the fingers.

Mysore Coffees.—These are East Indian varieties, good-sized, bluish-grey berries, with more or less of silvery covering, and yielding a fine, strong, and clean liquor.

Cannon's Mysore is a hard-coaty, plump berry. *Santawarry Mysore* is also a hard berry, not always coated, but sometimes coloury.

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Naidoobatum Coffee is an excellent variety from the East Indies. It is of a bluish-green colour and generally coaty, producing a good liquor. New crop arrives in England about Christmas.

Naphtha.—F. *Naphte;* G. *Naphta;* Sp. *Nafta.*

There are two kinds of naphtha in common use, Coal Naphtha, or Coal Tar Oil, and Wood Naphtha, or Pyroxylic. *Coal Naphtha* is a transparent brownish-yellow fluid obtained from the distillation of coal-tar and from petroleum, sp. gr. 0·75, boils at 160° F.

Large quantities are obtained from natural springs in the Caucasus, especially in the neighbourhood of Baku on the shores of the Caspian Sea. Probably there is no spot on earth where more highly inflammable matter lies exposed to such terrible conflagrations as that just reported from Baku, than in the district lying just beyond that town on the shore of the Caspian. Everything seems saturated with petroleum; the very air one breathes is laden with a greasy odour, and the waters of the bay are covered with an iridescent sheen which at night may be set on fire with most weird effect. Not only is black naphtha to be seen in monster fountains playing from the very earth, but white naphtha flows of itself in places, and a short way off are the natural gas vents over which the natives do their cooking without coal, and which once fed the sacred Zoroastrian fires. No wonder that the ancient Persians looked on this as holy ground, where the eternal heaven-fed flames of life burst forth in sacred buildings, the remains of which are still extant, and have recently been restored. But fire-worshippers come there no longer, except from curiosity, and the modern Persian or Parsee of Bombay and Gujerat kindles the oil shipped to him from Batoum without a sigh for a vanished belief. When the late Shah of Persia visited Baku it was necessary to import a number of priests for the occasion, that he might witness, in a portion of the Persian Empire that had been wrested from it by Peter the Great, a specimen of the worship that his predecessors had all but stamped out in the portion they had conquered and retained. For less distinguished visitors to see there is only a ruined tower, from the top of which flare natural jets through iron gas-pipes, and a number of cells with altars for the once-sacred fire and some ancient inscriptions.

With this exception there is little picturesque or attractive in the neighbourhood of Baku—a name corrupted from the Persian Bad-kuh or Bad Hill—which excels in dreariness and grimness the worst of our "Black Country" at home. Here our climate does tempt the grass to grow and beautify all spots left long enough alone by man; but there the arid soil is scorched and winnowed by the southern sun and fiery breeze, till even round the houses of the managers it is almost impossible to induce vegetation. Most of the wells are situated several miles from Baku, to the one manufacturing suburb of which—well styled the Black Town—the crude brown liquid is conveyed in pipes through which it is forced by a remarkably powerful engine. Lines of railway run to the various centres and on to the fire temple, which is being overshadowed by works for the preparation of the white naphtha which springs hard by, though, as it is the residue from the brown naphtha after the petroleum or kerosene has been extracted, the success of the venture is doubtful. As one steams out of Baku, tall shafts, not unlike those of some English coal mines, come into view, some twenty or thirty feet high, built of wood, each at the end of an engine-house. Hundreds of them stand scattered, some silent, some the scene of noisy boring, others of petroleum fountains, rising to their tops in a jet twelve inches in diameter, and then arrested by thick plates of iron. Even at that height the force of the stream is so great that the stones and sand in the course of a few hours bore through four to six inches of metal, and a fresh plate has to be in

reserve above. Should the top of the tower be carried away, the stream will rise to from forty to sixty feet, and be scattered in rain for a great distance round. Thus a few years ago one of the most prolific wells became the ruin of its owners, for, bursting all bounds, the torrent deluged so much of their neighbours' works that all their capital was spent in paying damages, and all the oil that was not caught in their own tanks was lost.

The wisest head has not yet succeeded in ascertaining how to discover the oil-pools and streams below ground, and the elaborate sections and plans worked out by those who control most borings have revealed little more than the erratic nature of the streams that seem to meander along the surface of the clay beds and rocks of sand and light earths, the pressure of which drives it up with such force when tapped from above. Sometimes the most successful wells have been sunk on small plots of ground that could not contain the oil received, while time after time the monster companies have sunk their tubes in vain. The largest of these companies are Swedish, but there are Armenians and Persians, Tartars, Georgians, and Caucasians both among the speculators and the labourers, and many of the original landowners—Mahometans chiefly — have become immensely rich by leasing their oil rights for paid-up shares, the only safe venture about it. The depth at which the oil is found varies greatly even in wells side by side, and the expense of driving some of the tubes, that descend to great depths, is enormous, the whole thing becoming pure gambling except for those who control large chances in land and resource. Each year the average boring grows deeper, and often the oil has to be pumped into cylinders provided with a valve in the bottom, opened by a lad who pulls a cord as it rises before him where he sits covered with spray. Everything round is saturated. No one objects to naphtha there, and the men even wash in it, using sand therewith, while all employed have a fixed allowance for fuel and light. No dwellings more dismal than theirs can be imagined. Dante should have visited the spot. All around between the wells lie lakes of settling naphtha, which, when clear of sand and stones, will be pumped into iron reservoirs. The roads have naphtha streams by the sides, and naphtha pipes of all sizes cross and interlace in all directions till they are hardly passable. One rashly thrown match would set miles in a blaze, and the most stringent regulations are wisely enforced. But for them, disasters would be terribly frequent. A very different appearance is presented by the palpitating Black Town, where in gigantic furnaces the naphtha is distilled and churned and distilled again as benzine, kerosene, and vaseline, and many valuable chemicals are one by one removed, till only the thick black residue, of use for fuel, is left, and much of this is used to feed the furnaces themselves. Boilers so heated closely resemble those intended for coal or wood, except that on the inside of the fire-doors are stout jets, through which it is pumped the length of the firebox, forming bright tongues of heat-giving flame. Railways and steamers alike are so heated in Russia.

The oil is a hydrocarbon, not containing any oxygen in its composition, and is exceedingly light, floating on alcohol, and becomes nearly colourless on re-distillation. It is very inflammable, and is used for burning in outdoor lamps, costermongers' stalls, cooking stoves, etc. It gives a copious flame, and leaves no residuum, but emits much smoke and odour. It is also largely employed as a solvent for india-rubber, paints, varnishes, etc.

In 1892 the crude oil was selling at Baku for about 1d. per pood of 36lbs., and it was often used for watering the streets. During 1899 the average price has been about 3½d. per pood.

Return showing total gross production of crude oil of the Baku fields for the year 1899:—

District.	Barrels.
Balakhany	11,458,415
Sabounchi	23,075,728
Romany	9,858,178
Bibi-Eibat	8,084,080
Binagadi	16,338
Total	52,519,739

Return showing total exports of naphtha products from Baku during the year 1899:—

Products.	Barrels.
Illuminating oils ...	11,463,344
Lubricating oils ...	1,270,666
Other products ...	123,000
Residuum (Astatki) ...	24,485,600
Crude	14,891,410
Total	52,234,020

Wood Naphtha, or Pyroxylic spirit, differs from Coal naphtha, and is derived from wood, and analogous to acetic acid. Crude pyroligneous acid contains about 1 per cent. of this alcohol. It has a penetrating odour and a disagreeable burning taste.

Naphthaline. — A product from coal tar and usually in the form of small white balls, with the odour of benzine. Used for the preservation of cloth and woollen goods from moths, worms, etc.

Naples Paste. —See *Italian Paste.*

Naples Soap. — This soap instead of having glycerine or fat for its base is professedly made chiefly from olive oil. In Southern Italy olives are, of course, very plentiful, and after the ordinary olive oil has been squeezed out of the berries, a coarse quality is obtained by treating the mass of waste pulp with chemicals, and this is the olive oil used for the soap. (See *Solfuro Oil.*) Occasionally hog's lard is added, and sometimes cocoanut oil is introduced to promote lathering qualities.

Of the Naples soaps exported to England a large trade is carried on in that description which is known as "Abeille 62." It has the appearance of a green and white marble, and contains 62 per cent. of olive oil, every batch being chemically tested before exportation. It is used for wool-washing, the cleansing and preparation of silks and stuffs, and also in connection with iron-work, steel, and wire drawing.

Narbonne Honey. — (See also *Honey.*)—A superior and very white kind, produced at Narbonne, in France, chiefly from the pale blue flowers of the rosemary plant and other labiate flowers.

Nasco Wine. — The name of a superior white variety, produced in Sardinia.

Naseberries, or Sapodilla Plums. — These are the delicious fruit of the *Achras sapota* (*Minusops balata*), or "bully tree" of the U.S., a large tree cultivated in Central America and other tropical climates. They have a rather acrid juice, but this disappears with incipient decay, and the fruit then becomes very sugary.

The elastic gum obtained from the bark of this tree is largely used as a masticatory (see *Chewing Gum*). The berries will only bear shipment when picked green. Very common in British Honduras and Curacao, where they are called *Nisperoes.*

Nata Flour. — An African fruit, very popular throughout the Soudan; grows in large pods, is of a yellow colour, and singularly rich in sugar, so much so that it is used in Africa by Europeans in the manufacture of confectionery and pastry. The tree is very similar to that which yields *Shea* butter, and abounds in the Niger district, especially around Timbuctoo; also in Bengal.

Natal Plums. — See *Amatungulu*, p. 38.

Natal Pepper. — (See *Capsicums, Chillies, Cayenne*, etc.).—A species of Cayenne, identified as *Capsicum fastigiatum*, Bl., and *C. minumum*, Roxb.

Natal Teas. — (See also *Teas, Blended Teas*, etc.).—These growths are not imported into this country to any large extent. The tea is grown

near the coast, where the loam is light. Tea cultivation in Africa only commenced about 1878, with Assam seed, and although it has been considerably extended, so far the crops have generally all gone for local consumption. The rainfall in Natal being low for a tea-growing country, the heavy dew-falls are chiefly depended upon for the necessary moisture.

In 1886 a quantity came here and averaged about 1/7 per lb., and again, in 1892, 300 half chests of Pekoes were sold in Mincing Lane, but only brought about 5d. a pound. The area under cultivation in 1891 was about 1,900 acres, and the product from yielding plants about 360,000lbs. There are now some 2,600 acres under tea cultivation, and being more reliable than coffee, the industry is making rapid strides. The crops now exceed a million pounds a year. The chief tea district is the Clifton, a few miles north of Durban, on the coast, close to the village of Stangar, on the main road to Zululand, about 29° South.

This tea has a decidedly characteristic taste, and (like Transvaal tobacco) is an easy and pleasant one to acquire, and when once acquired is not readily relinquished. Natal teas contain a notable quantity of mangancse, obviously derived from the peculiarity of the soil. The plucking season commences in September, and closes early in June following. The months of June, July, and August are taken up with digging and manuring the land and pruning the plants.

The tea is gathered by coolies in gangs of men and women, who pluck the first three young leaves of each shoot, dropping them into baskets. After being carted to the factory and "weighed in," the tea is spread out thinly on frames covered with hessian, and the leaf dried, the room being heated to 80 or 90° Fahr. After being withered till it feels soft and silky, it is put into the rolling mills — the bottom part of the machine rotating in one direction, and the top part in the opposite. The tea now looks like leaves fresh from the teapot, though not so wet, and possess a peculiar smell, that no grocer would recognise as belonging to tea. It is next laid out, about two inches deep, to ferment at 60° to 70°; and this process requires great care, for if it gets heated the tea will liquor thin and poor. It is now passed to the "sirocco," a drying and firing machine, regulated by a thermometer to about 250°. A strong blast of hot air passes through, which at once arrests all fermentation, and the leaf comes out ready for further treatment. It is carried on trays to the rolling and sorting machine. This has rollers and a long revolving sieve placed on an incline, the meshes gradually getting larger toward the outer end. Under this screen cylinder is a receptacle divided into compartments. The first catches "*Tea Dust*," the second "*Golden Pekoe*," the third "*Flowery Pekoe*," then "*Pekoe Souchong*," and, lastly, the "*Souchong*." The smaller leaves make the best tea, and the large, coarse-looking "Souchong" the worst. This latter is taken to another machine, that soon rolls it into good size and shape, shaking out all the dust. The tea is now put into bins to mature, for tea newly made is not palatable, but it is soon ready for packeting for sale.

Navel Oranges. — A very large, sweet, and usually seedless sort, grown in Brazil, also in California and elsewhere.

They are so called from the navel-like formation at the top, which is somewhat oval in shape.

Navets. — A species of turnip, small, but particularly full-flavoured. They are shaped like carrots, and of a light buff colour. Very popular in France, and specially cultivated. They are also exported to this country in tins and bottles, and retailed by the leading Italian warehousemen.

Neapolitan Ice Cream. — (See also *Ice Cream.*)—Confectioners recognise ice cream as of two kinds, the

Philadelphia and the Neapolitan. The former is made of cream, sugar, and flavouring only, while the latter includes eggs or other thickening material. Many kinds of Neapolitan cream are mysterious combinations of arrow-root and corn starch masquerading under this name. The real Neapolitan cream, however, is a rich frozen custard, a general favourite. The cream used in making the best ice cream is what is known as "double cream," being taken from milk that has stood twenty-four hours. This cream is also best for whipping, the "single" cream, gathered when the milk has stood but half as long, not whipping satisfactorily. The better the cream the richer and more delicious will be the frozen product, as it will neither freeze too hard nor melt rapidly. When milk is used in place of cream, and corn starch is substituted in place of eggs, a decidedly poor sort of Neapolitan cream is obtained. The more of these substitutes used, the harder is the cream when frozen, and the more quickly does it melt when exposed to the air. Such cream often has a coarse, flaky look, and is not at all satisfactory.

In making ice cream the best results are obtained by scalding part of the cream. The novice will, however, understand that this does not signify that the cream should be boiled, but that it is brought just to the steaming point over boiling water. This gives it a rich flavour. For acid cream or frozen fruit, porcelain-lined dishes are used. If the vanilla bean is used, it should be fresh, oily, and pliable. The best vanilla beans are covered with fine, needle-like crystals, suggesting frost, and are very fragrant.

Neapolitan Paste. — See *Italian Paste.*

Neatsfoot or **Trotter Oil** — An oil obtained from the feet of neat cattle. It is generally prepared by tripe-dressers, by simply boiling in water the feet of the animal, or steaming them in a close cylinder, and skimming off the fat or oil.

It is produced from sheep's feet as follows:—The feet of, say, 100 sheep are thrown into a tank and heated to about 170°F. As soon as the woolly hair can be scraped off the tank is emptied and the claws slipped off the feet. The latter are then made up into bundles of 18 each, and the oil quickly boiled out of them, after which the feet are washed in cold water, and are fit for sale as "*trotters*," and the oil, when cleared by settling or filtration, is ready for sale. In France the purification and decolouration are mainly done with sulphuric acid.

Neat's foot oil smells rather strong, but as it does not thicken, and will remain liquid below 32°, it is a useful lubricator, and often preferred for firearms, church clocks, and other exposed machinery, etc. It should have a specific weight of 0·915.

Apply to C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Nebiola Wine. — A sparkling variety of first rank in Italy.

Nectarines. — Port. *Percegos calvos;* W. *Melysber.*

NECTARINE AND PEACH.

A variety of peach known as *Amygdalus lævis,* and near akin to the apricot and almond, but is very

sweet, has a smooth rind, and a richer flavour, also smaller in size.

The nectarine seems to differ chiefly from the common peach through the rind of the latter being rougher and more downy, its flesh firmer, while the stone is always comparatively free or detached from the pulp, and not fixed or grown into it.

Negro Coffee. — See *Coffee Imitations and Substitutes.*

Negro Corn.—See *Sorghum, Dari,* and *Millet* (*West Indian*).

Negro Head. — See *Cavendish Tobacco.*

Negus. — W. *Cymysg o Win.*

A compounded liquor, made of port, sherry, or other wine, mixed with hot water, sweetened with sugar, and flavoured with nutmeg, lemon juice, and a little grated lemon rind. "Port wine negus" was so named after its inventor, Colonel Francis Negus, in the reign of Queen Anne.

Neilgherry Coffee. — An East Indian product, has a light greenish berry, and yields a good flavoury liquor. New crop reaches England in December or January.

Neo's Self-shining Stove Polish. —See *Stove Polishes.*

Nepaul Pepper. — A superior sort of cayenne, properly prepared from probably *acuminatum*, a small variety of the *Capsicum annuum*, remarkable for its violet colour, but brownish powder when ground. The best quality is ground in Nepaul, North India, and exported in tins.

Neroli Oil, or Essence of Orange Flowers. —(See also *Orange Blossoms.*)—A fragrant and volatile essential oil distilled in water from the flowers of the citrus *Bigaradia*, or bitter orange tree. It is usually colourless, but assumes a red tinge on exposure to the atmosphere. Dried orange flowers are often mixed with salt, packed in barrels, and exported from various points of Southern Europe to distillers in this country.

This scent got its name from having been used as her favourite glove perfume by the wife of a Prince of Neroli. It must not be confounded with the *oil of orange*, which is obtained from the fruit. A thousand pounds of orange leaves only yield one pound of neroli, but it is the principal essence produced in the district between the Var and the Italian frontier in France.

Generally sold in blue or paper-covered bottles, because of the turbid or unsightly colour which the genuine article naturally assumes.

Neufchatel Cheese. — A celebrated French make, from pure cream thickened by heat and then pressed in a small mould. The cheese weigh about a half pound each, and when fresh are considered a great delicacy; but when too old they acquire an offensive odour, from the vegetable growths often observed on them. In shape these cheese are long and round, like small pillars. Like Camembert and Brie, Neufchâtel depends more for its flavour and character upon the ferment and mould formed in the ripening cellar than upon any speciality in its manufacture.

Unlike most other kinds of cream cheese, it does not turn liquid by age, but merely shrinks or dries up.

The original is produced at Neufchâtel-en-Bray, but one kind is also made in Switzerland. (See *Swiss Cheese.*)

New Cheese. — A name given by Londoners to a make of cheese chiefly produced in Lincolnshire. It is made either wholly from cream, or, like *Stilton*, by adding the cream of one day's milk to the fresh milk of the following day. This cheese (being but very gently pressed) is very light and thin, and intended to be eaten *new*, with radishes, salads, etc.

New Jersey Tea. — A beverage made from the leaves of *Ceanothus Americanus*, a low shrub growing in Pennsylvania and other parts of the Eastern States of North America.

New Zealand Butter. — New Zealand butters are generally made at the dairy factories. These are central factories established throughout the country to which the producers bring their milk, and the butter is made by the best means known. It is placed in cold storage at a temperature of about 15°F., and frozen during transport to Europe. Very little salt is put in the butter during manufacture, but boracic acid is used in preserving it, and after the voyage of two months a little more of salt is added, so as to minimise the deterioration arising from the long voyage. It is usually imported in 56lb. boxes.

To ensure finer qualities of butter being shipped, the New Zealand Government in 1894 passed a "Dairying Industry Act," whereby all milk, cream, as well as cows, dairies, factories producing butter, etc., for export, are subjected to Government inspection. Every person preparing butter for export must, before the butter leaves the dairy or factory, distinctly and durably mark on each package, in dark letters other than red, the words "New Zealand Dairy," "New Zealand Factory," or "New Zealand Creamery,' as the case may be, also whether "pure" or "milled" (blended), and have it placed in one of the cool stores appointed by the Governor at least four clear days before shipment, for the purpose of having it examined and cooled or frozen.

The Government inspectors then inspect and grade each lot of butter, by stamping or marking each package according to quality. The official stamp is an arrow-head pointing upwards (↑), and the grade marks "1" for first grade, "2" for second grade, and "3" for third grade. By the same Act it is made absolutely impossible to ship "margarine."

This is intended to promote the butter industry, and prevent New Zealand shippers blending butters and shipping them under the name of "Finest Creamery" or "Finest Dairy Butter.

The blended or "milled" butter is a lower class of butter made by the farmers in little lots, and traded off to their local grocers, who mill the whole together, but very little of this is said to be exported.

New Zealand butters are never coloured artificially. They arrive in England regularly between December and June, just the period when butters here are scarce.

The selling of the finest brands that come into England is now in the hands of Geo. Wall & Co., Ltd., Liverpool and Manchester. (See advt., p. 10.)

New Zealand Tea.—See *Australian Tea.*

Ngapee.— A fish paste used as a condiment in India with rice. Over 15,000 tons is prepared annually.

Nicotine. — This poisonous alkaloid of tobacco, is now one of the most profitable articles in the market. It is used for horticultural purposes, to destroy plant and flower pests, the nicotine being slowly evaporated in the greenhouses. The ground tobacco leaf or snuff is infused with acid, and the liquor distilled with lime, the nicotine being then extracted from the water solution by means of ether, petroleum, or fusel oil. The Revenue Boards pass duty free all nicotine of 90 per cent. purity.

Niger or **Ram-til Seeds.** — The seeds of the plant *Guizotea Abyssinia*, a native of tropical Africa, also cultivated in India. The seeds are very small and black, but from them an oil is expressed which is used as a condiment, also as lamp oil. (See p. 412.)

Night Lights. — F. *Veilleuses;* G. *Nachtlichter;* It. *Lumicini;* Sp. *Lamparillas de noche.*

These are mostly made of tallow and a little wax, in shape of short, thick candles about the size of pill boxes, and surrounded by paper or card. The wick is formed of a thinner and finer cotton than for candles, hence they burn very slowly. They are chiefly intended to supply a subdued, equable, and gentle light in sick rooms, sufficient to dispel the dark-

ness of the night rather than a sleep-disturbing blaze. Some makes, however—the "Sherwood," for example—produce a more demonstrative refulgence, almost equal in brilliance to the ordinary candle-light. Night lights are made of various sizes to suit the four seasons of the year, and calculated to burn for about 6, 8, or 10 hours.

When lighted they are generally stood in a saucer or other vessel, into which sufficient water is poured to reach about one-third the height of the night light. They really seem a combination of candle and lamp, for when first lighted they burn as candles, but afterwards, when the fat is melted, they burn as oil lamps. It has been calculated that there are over fifty millions of night lights made in England every year, and each manufactory has its own registered brands or distinguishing titles for these useful articles.

Night lights were first introduced in 1848. They should always be stored in a perfectly dry and cool place.

Nigrine. —A black iron ore in fine powder, used for polishing metals.

Niko Nuts. — These come from Liberia, in Africa. Minus the fleshy covering, they are of a hard, bony nature, about two inches long by one and a half in diameter. Imported for their oil.

Nisperoes.—See *Naseberries.*

Nitrate of Potash. —Ar. *Ubikr;* F. and Ger. *Salpetre;* Hin. *Shorah;* It., Port., and Sp. *Salnitro;* Rus. *Senitra.* (Also known as Potassium Nitrate, Nitre, or Saltpetre, KNO_3.)

This product consists of potassium, nitrogen, and oxygen, and is found in several warm countries — especially India, Egypt, and Persia—on the surface of the soil, where it crystallises into long, six-sided prisms. In its rough and crude state it is of a dirty yellow colour, but when refined becomes almost colourless.

It is chiefly made into gunpowder, fireworks, etc., but is also used for making sulphuric acid and nitric acid (formerly called aqua fortis), and, having considerable antiseptic power, it is used in preserving meats, to which it gives a red colour. It is now extensively prepared from *nitrate of soda* and potassium chloride by double decomposition.

Nitrate of Soda.—F. *Nitrite de Soude;* G. *Natrium Salpetrigsaures;* It. *Nitrito di soda;* L. *Sodium nitrate;* Sp. *Nitrito de Sosa;* W. *Craig-halen.* (Also known as *Cubic Nitre*, Chili Saltpetre, or $NaNO_3$.)

It is a very valuable salt, analogous in its chemical properties to *potassium nitrate*, or nitre. There are but few products if any shipped from the West Coast of South America that have made such wonderful progress as Nitrate of Soda. It was first discovered by a native Indian of Peru, by accident. He had some Algaroba wood, and wanted to make a fire, took it, made a hole in the upper surface of the ground about 1 foot, then placed the wood in the hole, and lighted it. This fire came in contact with the caliche (or crude Nitrate), as found in some parts (2 to 8 feet thick). When heated, it began to run. This was shown to a scientific man, and the Peruvian Government thought that they could make gunpowder with it, but this proved to be a mistake. Small quantities of refined Nitrate were made, and in 1830 the trade began. A cargo of about 200 tons was sent to Liverpool. At time of arrival a heavy duty was on salt, and this was thought to be salt. The Customs put a heavy duty on the cargo, and the owners had the whole put into the sea! When the duty was taken off salt, this Nitrate of Soda began to arrive freely, and was used only in the manufacture of nitric and sulphuric acids. A large chemical manufacturer of the acids in Birmingham tried some of it in his garden. This was about the year 1847. He used it with good effect, and then put it on an acre of wheat, and the next acres none was put on. The increase in the wheat was marvellous.

The crude substance is generally found crystallised in small cubes, and it is therefore often called *cubic nitre.*

It is nearly all now imported from Northern Chili and Peru, and particularly from the province of Tarapaca, a rainless district, where it is found in a natural state and in immense quantities, often on the surface of the salt plains, which for hundreds of square miles are entirely destitute of all vegetation and animal life. It varies in thickness from a few inches to 10 or 12 feet, and the aspect has been compared by Darwin to a country after snow before the last dirty patches are thawed. A very important deposit was lately discovered (1894) in Columbia by M. Caracristi, which extends over a very wide area in the department of Magdalena, and closely resembles the Chilian product.

The richer deposits are sought for by experts, who are guided by the external appearance of the ground, for the best crude nitrate, or "*Caliche,*" is not found on the surface, it is usually covered by two layers, the top layer being of a friable nature, consisting of sand and gypsum, while the lower layer is a rocky conglomerate of clay, gravel, and fragments of felspar.

A hole is first bored through these two layers and the "caliche" till the soft earth below is reached; this hole is then enlarged to admit a small boy, who is let down to scrape away the earth so as to form a little hollow cup, which is then filled with gunpowder, and when exploded the "caliche" is separated with picks and conveyed to the refinery to be crushed and dissolved.

Scattered over the pampas there are several of these refineries, manufacturies, or "*oficinas,*" as they are termed, with tall black chimneys, and mostly owned by English companies. Each works has its public "store" and several huts near by, constituting a small village, entirely dependent for everything on external supplies brought from great distances.

The raw material on arrival at the refinery is boiled in open pans, liquor vats, etc., and yields from 20 to 50 per cent. of pure nitrate of soda, which is then sent by rail to one of the shipping ports, Iquique, Pisagua, etc. A heavy tax is laid on all the nitrate manufactured (one company often paying about £750 a day), and the yearly export amounts to over a million tons. About 100,000 tons comes to England, viz., one-third to London, one-third to Liverpool, and one-third to various smaller ports.

The export to Europe in 1830 was only 800 tons, but in the year 1895 it was one million two hundred and thirty thousand tons (1,230,000 tons), and the consumption is likely yet to very much increase. It should be used as a fertiliser by all who have a garden for flowers, fruit, and vegetables. It is used much more in Germany than in England; but is already extensively used by farmers as an agricultural fertilizer, or top dressing, being immediately available for absorption by the growing plant, especially *leaf* growth.

A sufficient dressing is about 125lbs. to the acre, and it is generally best applied during full growth. It is strongly recommended to mix the nitrate with salt before applying it to the land, say, two parts of salt to one of nitrate.

In some of the inferior qualities a small fraction of perchlorate of potash has been found, and as this is very injurious for certain crops, care is necessary that it be eliminated.

Nitrate of soda is now being applied to the tea plant in Ceylon, and for several new applications in the towns on the Mediterranean, but in England its great use as a remarkable fertiliser is not sufficiently known to the people; in fact, not five people in every 500 have ever seen it in the state that it arrives in this country. Greater publicity may now be given to it, and it will soon be better known to all fruit and vegetable growers.

The following table shows the decennial progress in the exports of nitrate from the West Coast of South America:—

1830 . . .	tons 800	1870 . .	tons 136,000
1840 . . .	„ 10,000	1880 . .	„ 225,000
1850 . . .	„ 23,000	1890 . .	„ 1,050,000
1860 . . .	„ 55,000	1896 . .	„ 1,230,000

Nitrate of soda is also used for the production of nitric and sulphuric acids, saltpetre, etc., by fusing it with lead and copper.

Nitre. —A common name for nitre of potash, or saltpetre. (See also *Spirits of Nitre.*)

Nitro-benzine. —See *Mirbane.*

Nitro-glycerine. — A compound formed by the action of a mixture of two parts by weight of sulphuric acid and two parts by weight of strong nitric acid, on one part by weight of glycerine. It is this nitro-glycerine which forms the essential explosive in the production of dynamite—a force over ten times as great as that of gunpowder.

Non-alcoholic Beers. — (See also *Aerated Beverages, Temperance Beverages, Unfermented Wines.*) — Draught beers in cask, such as botanic or herb beer, ginger beer, ginger ale, ginger stout, herb ale, hop ales, lemon beer, and many others with registered titles, are often made simply by dissolving 14lbs. white sugar in 20 gallons of water (filtered, or distilled), and adding 1lb. of the "Extract" (see *Extracts*) prepared for each kind, and which are sold by most of the wholesale druggists and essential oil manufacturers at 3/- to 3/6 per lb.

Other brewers of these beers boil their own flavouring, such as dandelion, ginger, hops, horehound, or other herbs, then pour the extract on to the sugar, and afterwards add a sufficiency of boiling water, also a little quillaia-bark solution to produce a froth, thus leaving the fermentation to take place in the cask or bottle.

All these "non-alcoholic" products are obtained by this partial alcoholic fermentation of sugar, but teetotallers should bear in mind that a pound of sugar in a gallon of water, fermented to its fullest extent, with a little yeast, at a temperature of 60° to 84° F. is capable of producing a beverage containing as much as 11 per cent. of proof spirit. Care has, therefore, to be taken to check the fermentation of these beers at the proper stage. The lower the temperature the better the keeping quality of the beers, but the lower the temperature the longer they take to ferment. It has also to be borne in mind that the longer these beers are kept in bottle, the more they ferment, until they often contain as much as 6 to 8 per cent. of spirit. The use of *Saccharin* in lieu of half the quantity of sugar is considered the best safeguard against this risk of prosecution.

On September 22nd, 1894, Mr. Alps, from Somerset House, in prosecuting, at Lancaster, on behalf of the Inland Revenue, called special attention to temperance drinks, and said samples of hop beer and hop ale had been taken which on analysis were found to contain from 8 to 10 per cent. of proof spirit, whilst ordinary beer did not contain more than 7 or 8 per cent.! The limit for alcohol allowed by law for unlicensed drinks is 2 per cent., but the Excise generally excuse all under 3 per cent. of proof spirit. If the officers find 3 per cent. of spirit the manufacturer or vendor is cautioned—if over, he is summoned.

The defence was that the process of fermentation caused the formation of alcohol, and suggested that such drinks could not be made without alcohol being formed in them. A fine of 10/- and costs was however imposed.

It is certain that many of the so-called Non-alcoholic wines, beers, etc., contain a good deal of spirit. In fact, the "Wines" would not be wines without. Cleanliness is absolutely necessary in these factories to avoid a peculiar class of fermentation known as the *mucoid*, and appears as a rapidly increasing gelatinous mass, which will run through every bottle and piece of machinery in the place. It is sporadic, and spreads as rapidly as small-pox, or cholera.

(See also *Extract of Herbs.* A speciality by Mr. Adams, Mansfield.)

Non-drying Oils.—See *Oils.*

Nonnettes. —A sort of small spice cakes made in France, especially at Dijon and Rheims. They are cylindric in form and very light, and were originally made by nuns, hence their name.

Noodles.—G. *Nudelen.*
Thin strips of dried dough made with wheat, flour, and egg, much in the same way as macaroni and vermicelli. The dough is cut in small pieces and rolled up for use in soups. They are also used for baked dishes. Very popular among Germans and Americans, and stocked by most of the fashionable grocers.

Norfolk Beaufins, or **"Biffins."** (See also *Apples* and *Apple Rings.*)—Norfolk and Suffolk Biffins are a sour but long keeping variety of apples, red and striped. They do not afford much flavour if eaten raw, but, dried and pressed flat, used to have a large sale, and considered by many as superior to the much lauded Normandy pippin, also without being so full of core and pips.

Besides Norfolk and Suffolk Biffins, there are other varieties well suited for drying, such as lemon or orange pippins, Blenheims, etc. The fruit should be quite ripe and sound. Get a long wire tray, and cover it with a layer of straight clean straw; place a layer of apples on this, seeing that the eyes are upwards; cover the apples with another layer of straw, and push the filled tray into a very cool oven; let them remain thus for about four hours, then draw the tray from the oven, and press each apple between the palms of the hands, having the stalk against one hand and the eye against the other; press them as flat as possible without breaking the skins; re-cover the fruit with the straw, and again place the tray in the oven. Repeat this operation four times, and see that the apples are thoroughly warmed through at each pressure. At the end of the fourth pressure the fruit should be quite flat and dry. The oven must be very cool, or the skins will burst.

Apple Rings are often preserved as follows:—*Wellingtons* are perhaps most suitable for this purpose. Pare and core them, using a small hollow tube to force out the core. Cut the fruit into rings about one-eighth of an inch in thickness, throwing the rings into cold water as they are cut, to prevent discolouration. Put a gallon of them into a clean copper pan, and stand it at the back of the furnace, cover the fruit with boiling water, letting it simmer till the rings are tender, but not soft. Dissolve 3lbs. sugar in three quarts of water, and bring it to a sharp boil, then add the rings to this hot syrup, and bring the lot to a boil, skim, and when cold fill rings and syrup into jars, cork or cover tightly, and store in a cool, dry place.

Norfolk Capon. — A jocular name for red herring.

Norfolk Cheese.—These are fairly good but not very popular, weigh 30 to 50lbs. each, and usually dyed yellow with either annatto or saffron.

The trade in this cheese has waned very considerably of late years, being like Norfolk butter superseded by Colonial and Foreign imports.

Normandy Butter. — See *French Butters.*

Normandy Pippins. — (See also *Evaporated Fruits.*)—These are a small spotted variety of French apples, with a large proportion of core and pips in them. They are extensively "evaporated" or pared, pressed, and dried in the sun in Normandy. The same kind are now grown and similarly prepared in America. When dried they are of brownish colour, very light and spongy, and are mostly imported into this country in canvas bags. The ordinary way of cooking them is to soak them some hours in water, and afterwards to stew them gently in the same liquor. They may then be served with cream or used for pies.

Norwegian Cheese. — The most popular cheese or *ost*, in Norway, is in appearance like a block of rather pale chocolate, and has a soft, not to say soapy, but sweet taste.

When cut thin and served as a sandwich is not at all to be despised. It is made up in square-shaped blocks of about 10-15lbs., and showily covered with tinfoil.

Nougat. — The French name for a confection made usually of blanched and chopped Jordan almonds with pistachio-nuts or chopped filberts, and embedded

in a sweet paste of sugar flavoured with either a little lemon juice or vanilla.

To prevent stickiness in handling, nougat is usually covered with a sheet of rice paper or similar substance. *Nougat Montelimar*, a white variety, is so called after the town of this name in the Drôme department and noted for its nougats. In this kind the almonds are entire and united by white of egg and sugar.

Noyau Liqueur or **Creme de Noyau.**—Literally Noyau, or Noyeau, means the stone of a fruit, and hence it is applied to a white and sweet liqueur or cordial made by redistilling spirit, in which fruit kernels, orange peel, or other like substances have been macerated. It is sometimes simply made with weak spirit, flavoured with bitter almonds, kernels of the cherry, peach, apricot, etc.

In Turkey the kernels of the Mahaleb cherry are largely employed. The best Noyau comes from Martinique, but being much sought after, it is scarce and dear. It improves very much with age. A pink-coloured Noyau is also made.

Nutmegs. — Da. *Muskad;* Du. *Muskaät;* F. *Muscades;* G. *Muskatennüsse;* It. *Noce Moscada;* Port. *Noz Moscada;* Sp. *Nuez, Moscada;* Sw. *Muskot;* W. *Pèr-gneuen yr India.*

The genuine round nutmeg sold in the best shops is the kernel of the fruit of the tree known as *Myristica moschata* or *fragrans.*

It is a native of the Moluccas. About the middle of last century the Dutch made an attempt to monopolise the nutmeg trade by destroying the trees in all other islands except the Banda Islands, and to keep up prices. Any surplus of nutmegs were burnt each year. The seeds were, however, dispersed by pigeons, and it was found impossible to carry out the plan successfully. They are now grown extensively in Penang, Singapore Hainan, Islands of Banda, Jilolo, Celebes, Amboyna, and several other islands in the East Indian Archipelago, and in Africa, particularly in Zanzibar. Nutmeg culture is also becoming a source of much profit in several of the West Indian Islands, especially in Grenada, and latterly in Jamaica. Ceylon has also begun to yield hopeful quantities, and the low country districts of Kurunegala and Kelana Valley are very promising.

In size and foliage nutmeg trees resemble pear trees, large and handsome, with richly verdured crowns and small leaves. They require a deep rich loamy soil, moist, but not swampy, with a humid atmosphere, and thrive best in steady river valleys from sea level up to 300 or 400 feet; but they will grow in favourable situations up to an elevation of 2,000 feet. The trees should be placed at distances of 25 or 30 feet apart; and if the situation is not naturally shady and sheltered, trees should be planted for the purpose of breaking the wind as well as for shade.

The female or fruit-bearing trees can only be distinguished after growing 7 or 8 years, when they flower, and planters may find about two-thirds of the young trees useless; but instead of rooting them out and replanting the ground, Mr. T. J. Harris has recently found it practicable to graft female nutmegs on strong, healthy seedlings. This is important and should result in larger supplies and lower prices. The trees flower and fruit all the year round and continue to produce fruit seventy or eighty years, and on an average each tree will yield 10lbs. of nutmegs, with about 1lb. of mace, every year; but when highly manured it is said they will produce ten times that amount. It takes nine months for the fruit to come to maturity. The young droops are, however, while green and tender, often preserved like jam, and, although seldom seen in England, are considered the most aromatic and delicious of all conserves. Nutmegs are noticeable structurally for the "ruminated" or marbled appearance seen in section, due to the folding of the inner seed-coat into the albumen, and for the "aril" or *Mace.*

The process of curing the nutmegs for the English market is as follows:—The ripe fruit containing the nutmeg is nearly a spherical droop, not unlike a round pear or common walnut, and of golden-yellow colour without and white within. These are gathered up from under the trees every day, except Sunday, and carried into the "boucan." The outer

or fleshy part of the fruit is rather tough, something like candied lemon, and is, in fact, often preserved and used as a sweetmeat; but it readily splits in two like a pea, and inside this outer fruit is found a thin but very hard shiny brown shell, tightly wrapped in the bright red network or ligament known as *mace*. (See *Mace*.) It is inside this shell that the ordinary nutmeg of commerce is found. The mace is peeled off and pressed flat between heavy blocks of wood, where it is left for two or three days, then put into a case and left till it acquires the proper colour. The nutmegs, with the shells on, are put into receptacles with fine mesh bottoms, so that the air can pass around them, and here they are turned and dried about a month—in fact, until the kernel, or bole, shrinks and begins to shake inside the shell. They are then exposed to the sun for a couple of hours a day for two or three days, and after this they are carefully cracked. Great caution is necessary here, for if the outside shell is struck too hard it makes a black spot on the nutmeg, which affects the value considerably. When cracked the thin shell flies off in pieces, and the nuts are steeped several times in sea water, again dried, then heated and smoked for several days over wood fires. They are next sorted according to size—the largest being for shipment to Europe, and the small or faulty ones separated for pounding and grinding, or for the expressure of the oil. (See *Nutmeg Oil*.)

Nutmegs are very liable to the attacks of maggots and a species of beetle, which materially injure their odour and taste. There are two systems of liming in vogue, the dry and the wet. In the dry process the nuts are treated with dry lime-powder, either by rubbing them between the hands, or shaking them in barrels. In the wet process it is customary in some districts for the nuts to be thrown into the newly-slaked lime and then spread over the floor to dry. Sometimes all the nuts are at once dipped three or four times, by basketfuls, into a strong lime-like pickle, thick as treacle, composed of calcined shells and salt water. Preserved in this coating and then dried in heaps, they are ready for packing in cases or ordinary flour barrels for shipment.

The liming processes are chiefly applied to the imperfect and poorest nuts, and by that means many corky or other imperfections are hidden that otherwise would be easily detected. The original object of liming nutmegs was to preserve the substance and flavour of the nut, as well as to destroy its vegetative power, but of late years this practice has been sadly abused. It is now used for making nutmegs sightly and hiding their faults, and making marketable those which at one time would have been altogether rejected. A good nutmeg should be round, large and heavy, of a drab or light-brown colour, and finely marbled in the cross section. The lime layer found on the surface of nutmegs does not render the nuts incapable of germination, simple thorough drying sufficing to bring about that result. The lime water in which the nuts are placed penetrates but a few cell layers into the nutmeg, and within a few minutes after the nut comes into the air, a layer of calcium carbonate is formed over the surface. Nuts with a lime coating and without were exposed to the attacks of *Sidodrepa panicea L.*, one of the commonest and most destructive pests. After six months all nuts not provided with the lime layer were gnawed, and but one of those having a lime coating. The action of the lime is not chemical, but purely mechanical, the powder held by the woolly covering of the beetle clays up its breathing pores, chewing apparatus and reproductive organs, finally rendering the insects incapable of performing the functions trusted to these different organs. Therefore liming and a frequent repetition of the process is advised.

The liming injures the flavour, and brown unlimed nutmegs are best; but they are very liable to damage from the weevils referred to, and even after they have been treated as described. The best way of keeping them for a length of time is in dry lime.

Of the various kinds usually met with those known as "Penang" are the most esteemed. Next to these rank the

Dutch, or Banda kinds, and after these the Singapore nutmegs. In the Dutch, or Batavian, the exterior exhibits a number of white furrows with brown projections, arising from the liming process adopted. Another kind largely imported is the *Myristica argentea*, of long and narrow shape, imported by the Dutch from New Guinea, and known in Germany as "horse-nutmegs." In these the arillus, or mace furrows, are less marked, and their odour, although very permanent, is less delicate than the true kind. They are also very friable, the fragments being used for the production of the essential oil. (The mace of this species has not yet been brought into commerce.) These long nutmegs reach England chiefly by way of Amsterdam, and are often mixed with wild ones, the latter having scarcely any flavour or odour.

The Eastern parts of the Malay Archipelago and New Guinea seem the best for nutmeg culture, and there is situated the centre of their distribution. The excellent nutmegs from the Banda Islands, Moluccas, Sumatra, Celebes, and Java, where over three-fourths of the world's supply are grown, nearly all go to Holland (Amsterdam and Rotterdam), and are there sorted by the sworn spice-brokers. Every case is opened, and the worm-eaten nuts, if any, thrown aside, whilst the contents are classified as 1, 2, 3, 4, and "separate."

Every three months public sales are held in Amsterdam and Rotterdam, the first days of these sales alternating between the two markets. Samples may be inspected in the bonded warehouses daily during 4 or 5 days before the sale. The conditions of sale are: Bids to be made in cents. (Dutch) per ½ kilog; delivery within 14 days, dis. 1½ per cent., or nett at 3 mos. Bids are only accepted through sworn brokers who are bound to state name of buyer. The large importers have lately sold in public sale by auction, whilst a few others still adhere to the old system of selling under cover. For each parcel a dock-warrant is handed to the owner, which entitles him to remove the parcel at once or to leave it in bond at a charge of 15 cents. (Dutch) per 100 kg. for rent and insurance. All bankers will advance money on these warrants, and, as nutmegs well stored will keep good, there is much speculation when prices are low. The buyer has a right to have each parcel weighed over again, but he seldom demands it. He is also entitled to have each case opened to inspect the contents, but the broker's description is considered reliable. Every buyer may repack his goods in his own style and according to their destination. On leaving bond, goods in transit are free of duty, but on parcels for home consumption in Holland a small duty is payable.

There are many wild or inferior kinds of nutmegs, such as the *Santa Fé nutmeg* (*M. otoba*), from Colombia, S.A., the *Brazilian nutmeg*, from a species of laurel tree, the *Californian nutmeg*, the *Clove nutmeg*, the *Peruvian*, etc., all of very little real value.

Wild, soapy Nutmegs, *M. fatua*, from Borneo, and Wild Mace also, are often foisted on to retailers instead of the true kinds, whereas they are really different fruits altogether.

Ackaway Nutmeg is a spice grown in Guiana, the fruit of *Acrodiclidum camara*.

Nutmegs are, moreover, often deprived of a portion of their oil by distillation, or "sweating," as it is called, and yet are afterwards sold as entire nutmegs. Some, after being riddled by insects, are "stopped" and mixed with sound ones. In fact, the thick paste used for stopping—made of flour, oil, and nutmeg powder—has occasionally been moulded into false nutmegs!

This swindle may be detected by breaking the sham nut. It lacks the characteristic graining of the real article, whilst the mark of the moulding always leaves some traces.

Connecticut, in America, has long been dubbed the "Nutmeg State," in allusion to the alleged manufacture there some years ago of wooden nutmegs out of pine knots.

The medical value of good nutmegs is considerable, especially in the treatment of diarrhœa, when half a drachm in

milk is generally effective. Sleeplessness may also be relieved by them when opium fails and chloral is not advisable.

The *female*, or round nuts, are the best; they should be large, fresh, moist, heavy, of good smell, and yield oil readily when pricked, and not be worm-eaten or corky. If a quantity of nutmegs be found infested by insects they may be easily got rid of by exposing the nutmegs on sieves to the fumes of burning sulphur, in a close chamber or other suitable vessel. The nutmegs imported into this country (about 250 tons yearly) are generally limed and packed in cases, or piculs and half piculs (a picul being 133⅓lbs.). It may have often appeared strange to the uninitiated that *ground* nutmegs may be bought at about one-third the price of *whole* nutmegs. But when it is considered that the faulty, broken, mouldy, worm-eaten and wild nutmegs may be bought at about 3d. per lb., and then ground and dried at an expense of a further 1d. or 2d., the facts become more obvious. Among the collateral products of the nutmeg-tree are Oil of Nutmeg (Oil of Mace), Candied Nutmeg Fruits, Candied Mace, and Nutmeg Fruits in vinegar or salt.

Merchants, brokers, or others interested may find a wealth of information in the recent work entitled *Die Muskatnuss* (the nutmeg, its history, botany, cultivation, trade and value, also its imitations and surrogate; and with a treatise on the cultural history of the Banda Isles) by Dr. O. Warburg. With three helio-gravures, four lithographic plates, one map, and 12 illustrations in the text, Leipzig, Engelmann, 1897, 8vo. xii. and 628 pages. Price, 20 marks.

Nutmeg Importers and Grinders:—Hedley, Gamble and Crosfield, Circus Street, Liverpool.

Nutmeg Essence.—Used as a flavouring or zest by cooks, liqueuristes, confectioners, etc., and prepared from essential oil of nutmegs and rectified spirit, same way as cinnamon essence.

Nutmeg Oils Butter, etc.—*Lat. Adeps Myristicae.*

Oil of Nutmeg is obtained either by pressure of the broken kernel or by distillation. Volatile or essential oil of nutmeg is procured by distilling the nutmeg with water. The substance termed "*Butter of nutmeg*," "*Concrete oil of nutmeg*," or "*Expressed oil of mace*," is obtained by subjecting the nutmeg or mace to a great heat and then squeezing or pressing it in heavy presses. These substances are a kind of fatty paste. A pound of good healthy nutmegs will yield three ounces of oil. According to Professor Neumann's experiment the oil produced is one-third the weight of nutmeg. It is yellow, of the consistency of tallow and of a pleasant smell. This is a fixed or bland oil, but a transparent volatile oil can be obtained by distillation. It consists of hydrogen and oxygen with carbon, and is exceedingly volatile, evaporating very rapidly when exposed to the air.

Good nutmegs contain 6 to 8 per cent. of this oil, besides about 30 per cent. of fat, and only 5 per cent. of ash.

Oil of nutmegs is really the same as *Mace Oil*. It is mostly imported in stone jars, and of the consistency of butter. It is of yellow colour and possesses the fragrant smell of mace; sp. gr. 8·0-910 at 15 C.

Nuts.—F. *Noisettes*; G. *Nüsse*; Port. *Noces*; Sp. *Nueces*.

Nuts are rather indigestible, and require thorough mastication; but doctors say that elderly people would be much benefited by a more extensive nut diet.

List of various kinds of nuts described in this book:—

Almonds.	Caaju.
Arachide.	Chestnuts.
Arachis	Chufa.
Areca.	Cob.
Bambarra.	Cocoa.
Barcelona.	Coker.
Betel.	Cola.
Bladder	Corozo.
Brazil.	Cuago.
Butter.	Doodoe.
Candle.	Earth.
Cashew.	Filberts.
Castanha.	Futui.
Castor-oil.	Galls.

Ginguba.	Ling.
Gouba.	Lumbang.
Goubers.	Lychee.
Gourou.	Mabo.
Ground.	Mandubin.
Hazel.	Monkey.
Hickory.	Mpinta.
Hog.	M'pogo.
Ivory.	Mora.
Japan.	Mutugo.
Jur.	Niko.
Koker, or Coker.	Paradise.
Kola.	Pea.
Pecan.	Singhara.
Pignolia.	Somari.
Pindal.	Spanish.
Pindar.	Squari.
Pine Kernels.	Suwarrow.
Pinone.	Tiger.
Pistachio.	Trapa.
Ravensara.	Turkey.
Sapucaia.	Walnuts.
Shoe.	Water.

About £100,000 worth of nuts come from Spain every year.

O

Oak Apples.—(See also *Galls.*) A kind of gall-tuft, soft and spongy, produced on an oak by the gall fly *Teras* or *Andricus terminalis. Oak-figs* are fig-shaped galls on the young growth of the White Oak produced by the fly *Cynips forticornis. Oak-plums* are plum-shaped galls (*Quercus prunus*).

Oat Cake.—W. *Bara Ceirch.* (See also "*Farls.*") Also known in the North of England as "havercake." This is the article which has obtained for Old Scotland its soubriquet as the "Land o' Cakes," and not the rich dainties known as "*Shortbread.*" They are made of two degrees of thickness—one very thin, like the Passover Cake of the Jews, and which, when thoroughly dried and closed in canisters, will keep good several years. The other kind are about ¼ inch thick, and are made thus:—Form 7lbs. of best Scotch oatmeal, not too coarse nor yet too fine, into a firm paste with ¼lb. of butter, cold water, and a little salt; roll this out (not too thin), and cut into triangular shapes, slightly bake them on the girdle, dry them in front of the fire so as to curl them up a little, and keep them crisp in canisters. If the meal from any cause should make the cakes too hard, a small quantity of carbonate of soda mixed into the dough will make the cakes eat freer. This should, however, be sparingly done, or the cakes will acquire an unpleasant taste of the soda. They are best eaten when quite fresh, but will keep well in biscuit tins, and may be warmed up just before use. The thicker sort are rarely dried throughout, and are very apt to turn sour, so that only those used to it can eat them.

Oat cake is said to have been found containing 10 per cent. of plaster of Paris, which is, of course, a most pernicious adulteration.

Specialities:—McVitie and Price's Oatcakes, Edinburgh.

Oatmeal.—F. *Farine d'avoine; Lat. Avenae farina;* W. *Blawd Ceirch.* (See also *Rolled Oats, Prepared Foods,* etc.)

This is the meal of oats ground and kiln-dried, after they have been kiln-dried and freed from the husk. The best flavoured is of dark creamy colour, especially when cooked. Oatmeal was for a long time the main food of the Scotch peasant. In a large number of cases, indeed, it was all that fell to his lot.

Dr. Johnson, the *Ursus Major* of last century, scoffed at the bare idea of Englishmen eating such horse meat, which was "only fit for the boors and brutes," but ideas have changed, and Dr. James Begg, a tribune of the people, was never tired of sounding its praises.

A bag of oatmeal was the only ration the Scotch clansman provided himself with when he sallied forth with his clan to a fray, and Scotch Highlanders have been considered one of the most martial and enduring races on record. Indeed, next to his Presbyterianism, oatmeal porridge has been said to be the chief pride of the Scotsman's life.

Oatmeal is richer in oily, fatty matter

than any other grain (five times richer than wheat), contains nearly 20 per cent. of nitrogenous principles, and is richer in protein than the best wheat. Owing to the peculiar quality of the gluten in oatmeal it cannot be made into fermented bread, like wheat flour, but is largely used for gruel, brose, porridge, stirabout, or hasty pudding, as well as for oat-cakes, parkins, biscuits, budram, bargout, etc., especially in Scotland and other northern countries. (See *Rolled Oats*, *Sowans*, *Farls*, etc.)

Oatmeal is one of those articles which usually gains weight but loses flavour in the retailers' hands. 100lbs. of oats, weighing 45lbs. to the bushel, commonly yield about 60lbs. of oatmeal. Being sent out of the mills in a highly dried condition it readily absorbs considerable moisture, especially if the weather be humid, and sacks will in this way often gain 7lbs. each in weight, though, of course, the flavour will be injured.

Scotch Oatmeal.—The best oats are undoubtedly grown in Scotland, especially in East Lothian, and the finest oatmeal made there, but it must be remembered a great many oats are imported and merely milled in Scotland; inferior qualities are therefore apt to be sent out as Scotch.

To import foreign oats into Scotland is, of course, quite legitimate, but to mill them and re-sell them as "Scotch" is a fraud. That country has long been famous for its oat products, but it may soon become notorious for its foreign imitations.

Oatmeal is prepared in three grades or cuts—viz., *pinhead*, *medium*, and *fine*; or *rough*, *middle*, and *small*. The finely powdered is also known as "Derbyshire" oatmeal. Some packers partly cook the oats so that less boiling may be required afterwards.

Some people prefer the appearance of *white* oatmeal, and millers are therefore obliged to kiln-dry slack or soft, but the flavour is neither so good nor will it keep so long as when highly dried. *Fig Dust* is a special make for feeding cage-birds. Oatmeal is sometimes kept on hand eight to twelve months, but it loses flavour and tastes old and bitter.

Oatmeal wants much and very careful cooking in order to break its starch cells, and, of course, the larger and coarser the meal, the longer the boiling required; but it is worth all the trouble, and retailers would do well to give more attention to genuine Scotch oatmeal, especially during the winter months.

The way to get a good trade in it is to get it freshly milled, and weekly, if possible. The chief adulterant to guard against is barley meal, and this is best detected by the microscope. Oatmeal is as sensitive to bad odours and taints as butter, and anyone who knows the pains taken by our leading manufacturers to secure superior quality must often be greatly mortified to see the careless way in which it is handled by some retailers. For finest quality, apply to Keen, Robinson & Co., Garlick Hill, London, E.C. (sole proprietors of *The Waverley Oats*), or to Morris and Jones, 13 to 19, Sir Thomas Street, Liverpool.

Oats.—Da. *Havre;* Du. *Haver;* F. *Avoine;* Ger. *Hafer;* It. *Vena;* Port. *Avea;* Rus. *Oves;* Sp. & Lat. *Avena;* Sw. *Hafre;* W. *Ceirch.*

Oats are the seed of the plant *Avena sativa*, or *A. orientalis*, of both of which species there are numerous varieties both in the United Kingdom and elsewhere; but it is not known what was the original wild form. It is the same with the wheat, barley, and many other plants which have been so long in cultivation. The earliest record of oats is by Pliny, who mentions that they were grown in Central Europe. In England the black, white, grey, and brown or red are the most common, but Scotch growths are the largest grains.

The potato-oat, well known in both hemispheres, with a large white plump grain, is considered the best, and is mostly grown on land in a high state of cultivation. It owes its name to having been first found in Cumberland (1788), growing among potatoes.

The Black Poland is also highly esteemed. Others are well known as the Hopetoun oat, an early variety; the Sandy oat, which is best for poor wet

land. The White and Black Tartarians are coarse, but excellent sorts for horses, cattle, and sheep; so is the Siberian.

The husk is particularly hard, but unless it be broken the gastric juice cannot act upon the kernel, and it will pass through the stomach and bowels undigested. Some oats are also furnished with long sharp spikes, or horns, which are apt to become fixed in the folds of the intestines, and to accumulate in large masses in the bowels of the horse. Hence it is desirable for proper nutrition that it should be entirely removed or divided by bruising or grinding, especially as the kernel is really the digestible and nutritive part.

Oats will grow in colder and wetter climates and on poorer soils than any other grain; also in hotter climates than either wheat or rye.

They are cultivated very extensively and also most successfully in Scotland, and in elevated rather than in lowland districts, where in meal cakes or porridge they have long formed a great part of the food of the people.

It has lately been found that they are rendered dietically more acceptable when flattened out like wafers. (See *Rolled Oats*, *Groats*, etc.)

The husks are used both in Scotland and Wales for the preparation of a kind of porridge. (See *Sowans*.)

About 170 million bushels of oats are grown yearly in the United Kingdom, a crop very nearly equalling that of all the other cereals put together. As many as 70 or 80 bushels per acre are obtained from rich land, while foul and exhausted ground may only yield about 20. Oats weigh 35 to 45 lbs. per bushel, and yield at an average about 8lbs. meal for 14lbs. corn.

The fame of these ancient and simple grain as a human diet has long held a high position in Scotland, and has recently spread wherever Britons live. Time was when oats were looked down upon, but even in the United States they are now surpassing maize foods in the highest families.

The brown or red oat is chiefly confined to Cheshire, Derbyshire, and Staffordshire. A species of naked oats, provincially called *Pillar*, is raised in Cornwall. Of all cereals, oats are when husked the richest in fat, often 11 per cent., and in albuminoids often 19 per cent., and the proportion of kernel is largest if the oats be harvested about ten days before being dead-ripe—the grain will ripen itself in sheaf.

Obertine Biscuits.—These are of a rather peculiar character, their mission being intended not to appease, but to create appetite; also to give a zest to liqueurs, spirits, etc., and aid digestion. Sandwiched between the biscuits are delicacies, such as fish, fowl, etc.

Ochres.—W. *Lliw-bridd.* (Sometimes spelt *Okers*.)

These are fine clayey earths resembling chalk, lumpy, and containing particles of iron. They are really combinations of alumina and oxide of iron of various colours: red, blue, yellow, brown, green, or black, and are readily diffusible in water. They are very valuable in forming both oil and water-colour paints, and are sometimes made into polishes for goldsmiths, coppersmiths, etc.

Ochres are in greater abundance in England and Italy than in other countries, the yellow kinds coming mostly from Oxfordshire, and the red from Italy (See *Venetian Red*, *Umber*, *Sienna*, etc.), and are extensively used for inferior house painting.

In Italy yellow ochre is found almost entirely on the surface, but sienna occurs among the deeper deposits, and the best layers of it are those furthest from the surface. The upper layer delivers *Bolo di terza* of third quality, the next *Bolo di secunda*, and the lowest *Bolo di prima*, which is the first quality. From this last an even better brand is sorted out by hand labour, and is locally known as *Spurgo di Bolo* or *Giallone*, and is called *Electa* in Germany. The deepest earth contains usually from 70 to 80 per cent. of water and, therefore, undergoes a preliminary drying on the surface exposed to sun and air. The burning of the earth is carried on by means of wood charcoal. Some of it is sent to Leghorn in a raw state. Most of the burning, however, takes place at the mines, and

what is done at Leghorn is the breaking up and grinding of the lumps of earth which have been burnt. The earth then arrives at Leghorn in four different states, quite raw, burnt but unground, ground but unburnt, and both ground and burnt. The working up of the stuff in Leghorn is simple enough. The raw earth which has only dried at the mines by the exposure to air and sun previously mentioned, and which still contains from 20 to 25 per cent. of water, is at once dried in regularly heated ovens until the percentage of water present is reduced to about 5. It is then burnt again at a much higher temperature in stone-built furnaces. It is lastly broken up and ground to a fine powder between granite stones in a powerful steam mill.

Red ochre is a term that more properly applies to a class than to an individual pigment, and comprehends Indian red, light red, Venetian red, scarlet ochre, Indian ochre, redding, ruddle, bole, etc., besides other appellations, such as English vermilion and Spanish brown or majolica. Red ochres are mostly hues and tints rather than definite colours, or more properly classed with the tertiary, semi-neutral, and broken colours; they are, notwithstanding, often very valuable for rich tints in dead colouring, and for their permanence, etc., in water, oil, crayons, distempers and fresco, and in a low tone of colouring have the value of primaries. The greater part of them are native pigments, found in most countries, and very abundantly and fine in our own; but some are productions of manufacture, and they have been produced in the variety of nature by art.

For ochres, apply to C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Œdenberger Wine.—A sound and refreshing white variety, produced in Hungary.

Ofen Wine.—See *Buda.*

Ogeechee Limes.—See *Lime-fruit.*

Oil-Cake, or Oil-seed Cake.—F. *Tourteaux;* G. *Oelkuchen;* It. *Focaccine;* Sp. *Tortas.*

These consist of the compressed mass, or refuse, of either linseed, rape, poppy, mustard, cotton, Rubsen or other seeds from which more or less of the oil has been extracted.

Cotton-seed Cake.—When the seed has not been deprived of its hulls by decortication before being crushed, the hulls pass into the cake, to the deterioration of its nutritive value. In England and Scotland, where Egyptian cotton-seed is exclusively used for making oil, the pressed cake almost invariably contains these hulls.

Some American crushers, who decorticate the seed before pressing out the oil, demand a proportionately high price for their cake.

Each kind is more fully described under its own heading. (See also *Dodder Cake* and *Earth-nut Cake.*)

Rapeseed cake is mostly fed to sheep. Over 77 per cent. of the oil-cake imported from abroad comes from the United States, 9 per cent. from Russia, and 4 per cent. from France.

Oiled Paper (Oil and water proof).—This is very useful as a substitute for parchment, bladders, or gutskins, to tie over pickles, jams, etc., and to wrap many articles of the shop.

It is very easily prepared—viz., by brushing sheets of paper over with boiled oil, and then hanging them up to dry slowly.

Oil of Anise.—See *Anise Oil.*

Oil of Ben.—See *Horse-radish Tree.*

Oil of Mustard Seed.—See *Mustard-seed Oil.*

Oils.—Da. *Olje;* Du. *Oli, Oly;* F. *Huile;* G. *Ol;* It. *Olio;* Pol. *Oley;* Port. *Azeite, Oleo;* Rus. *Oaslo;* Sp. *Aceite;* Sw. *Olja;* W. *Olew.*

These unctuous liquids may be divided into several classes—Fixed or fat oils, volatile or essential oils, mineral oils, drying and non-drying.

Fixed Oils or *Fats* comprise animal lard, tallow, etc., some vegetable fats and oils, fish oils, whale oil, palm oil, olive oil, cacao butter, etc. They do not readily evaporate, but dry by solidifica-

tion and chemical change, leaving a permanent greasy stain on white paper. They will all melt with less heat than that at which water boils, but they cannot be distilled—that is, heat will not convert them into steam which, when cold, will turn into oil again; hence they are called *fixed* oils.

Volatile, Ethereal, or *Essential Oils* are those which will all pass away in vapour at common temperatures. The stain they leave on paper is not permanent, but rapidly passes off after drying, and hence they are termed *volatile*. These are usually more limpid and less unctuous than *fixed* oils, and are mostly obtained by distillation from flowers, wood, fruits, or vegetables in water, and not from pressure.

Mineral Oils consist of carbon and hydrogen only, and are mostly used for artificial lighting. For this purpose they are undoubtedly superior to *fixed* or fat oils, and give a much more brilliant light, besides being much cheaper. To some extent, mineral oils are also used for lubricating purposes, and for soap making.

Drying Oils are of two classes, those which thicken when exposed to the air, such as those of linseed, poppy, and hempseed, also nut oils; they absorb oxygen, stiffen, gradually becoming like varnish, and finally setting quite hard, hence they are always mixed with paints which would not dry if mixed with non-drying oils.

The other class of drying oils are the essential oils already referred to, and comprise those which dry simply by evaporation, as water or spirit does, leaving no trace behind.

Castor oil will dry, but requires a very long time. Non-drying or glutinous oils include the oils of olive, almonds, colza, pea-nut, cotton seed, mustard seed, etc.; when these are long exposed to the air they turn rancid and nauseous instead of drying. All *fixed oils* may, however, when old, be restored by boiling them about a quarter of an hour with a little water and calcined magnesia, or simply by filtering them through freshly-burnt charcoal.

Cotton-seed oil is not a lubricant nor a paint oil, but over a million gallons are now made yearly in the United States alone. It is mostly used as an adulterant of other more costly food oils. A large amount is used in the canning of sardines, salmon, and other meats. (See p. 301.) As expressed from the seed it is mahogany coloured, and carries in solution complex matters which render it a very impure, or "Crude oil," and to fit it for industrial and domestic purposes it is purged with caustic soda, and then cleaned and sweetened with powdered whiting. American refiners have the secret of producing this oil clear and of sweet flavour, and neutral to the litmus test, but it is rather high in price, and is sold under various registered names.

Blown or Thickened Oils.—In addition to the drying oils, there are other oils, such as rape, cotton-seed, olive, ground-nut, sperm, neatsfoot, etc., which have the property of absorbing oxygen, and thereby becoming thick and viscid; and this property is taken advantage of in the production of heavy viscid oils, which are used, in conjunction with thin mineral oil, for the purpose of preparing lubricants suitable for heavy machinery.

Oils are all lighter than water, and will not mix with it; they will, however, dissolve in ether and turpentine, and generally in alcohol.

Neither oils nor fats should be long exposed to heat, light, or air, as they always deteriorate, and are likely to turn rancid. Keep them in a cool place, and well covered.

In the wholesale trade there is a custom when buying or selling by the gallon to reckon all at 9lbs. to the gallon, so that 50 gallons of oil only measure about 43 gallons.

Weight of various oils at 60°F.

	Lbs. per cubic ft.	Lbs. per gallon.	Spec. grav.
Almond	57·38	9·0	0·91
Argan	57·45	9·0	0·91
Brazil Nut	—	—	0·91
Candle Nut	58·0	9·3	0·92
Castor	60·24	8·0	0·96
Cocoanut	54·0	8·75	*0·91
Cod Liver	54·94	8·75	0·92
Colza	56·25	9·12	0·91
Cotton	58·14	9·3	0·93

	Lbs. per cubic ft.	Lbs. per gallon.	Spec. grav.
Ground Nuts	57.25	9.0	0.92
Hempseed	58·17	9·5	0·92
Lard	54·34	8·75	0·91
Linseed	58·12	9·0	0·93
Maize	—	—	0·92
Mustard	58·25	9·4	0·91
Niger	57·0	9·0	0·93
Olive	57·45	9·12	0·91
Palm Nut	56·54	7·54	*0·96
Peach Kernels	57·38	9·3	0·91
Poppy	57·77	9·0	0·92
Rape	57·22	9·0	0·91
Sesame, or Gingelly	57·0	9·2	0·92
Sunflower	57·81	9·0	0·92
Tallow	59·0	9·50	*0·94
Walnut	—	—	0·92
Whale	58·0	7·71	0·92

The oils marked * being solid at 60° F. their specific gravities are taken at lowest melting point.

Linseed, *Cotton-seed*, *Rape* and other seed oils generally are sold by the ton of 20 cwt., or 9lbs. to the gallon.

Fish oils and *Olive oils* are sold by the tun of 252 gallons.

Turpentine (crude) is often sold by the cwt., or the ton of 20 cwt., or 8lbs. to the gallon. *Spirits* 8½ lbs. to the gallon.

Copra Oil (cocoanut), *Palm Oil*, and *Lard Oil* are sold the same as seed oils.

Neatsfoot Oil is usually sold by the gallon of 9lbs.

Petroleum Oil is quoted by the gallon of 8lbs. if American, and 8¼lbs. if Russian.

Benzoline, *Naphtha*, and *Petroleum Spirit* are sold by the gallon of 7lbs.

Lubricating Oils are commonly sold by the ton of 20 cwt.

Cottonseed is sold by the ton, which is approximately equal to 5½ qrs.

Fish Oil.—63 gallons equal 1 hhd.

Sperm Oil weighs 8½ to 9 lbs. per gallon.

(See Table, page 643.)

List of the principal Oils described in this Book:—

Acorn.
Almond.
Anise.
Arachis.
Ben.
Birch Tar.
Boiled.
Cade.
Carapa.
Caraway.
Cassia.
Castor.
Cinnamon.
Citronella.
Clock.
Clove.
Coal Tar.
Cocoanut.
Cod and Cod Liver.
Colophony.
Colza.
Cooking Oil.
Cottonseed.
Drying.
Edible.
Earth.
Earth-nut.
Essential.
Fusel.
Gingelly.
Ground-nut.
Hempseed.
Huile d'Enfer.
Juniper.
Lard.
Lardine.
Laurel.
Lavender.
Lemon.
Linseed.
Lubricating.
Mace.
Maize.
Menhaden.
Mineral.
Mirbane.
Mustard.
Neatsfoot.
Neroli.
Nutmeg.
Old Oil.
Oleine.
Olive.
Palm.
Palm-nut.
Paraffine.
Paradise-nut.
Peppermint.
Petroleum.
Poppy.
Porpoise.
Rape.
Rock.
Rose.
Rosin.
Safflower.
Seal.
Semsem, or Sesame.
Sewing Machine.
Shale.
Slab.
Solfuro.
Sperm.
Sunflower.
Tea-seed Oil.
Teel, or Til.
Thyme.
Train.
Turpentine.
Watch.
Whale.

For prices of Oils, apply to Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool; or C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Oil-seed Cakes.—See *Oil Cake*.

Oil Substitute.—A creamy emulsion, largely used in the manufacture of boot-blacking, brown boot cream, dubbin, furniture polish, block black lead, showing how petroleum oil is utilised in place of more expensive oils.

A READY RECKONER

For Fish, Seed, and Olive Oils, Turpentine, etc.

Per Gallon Imperial Meas.	Seed Oils per Ton of 20 cwt. or 9 lbs. to the Gallon.	Fish and Olive Oils at per Tun of 252 Gallons.	Spirits Turpentine, per. Ton of 20 cwt. or 8½ lb. to Gal.	Per Gallon Imperial Meas	Seed Oils per Ton of 20 cwt. or 9 lbs. to the Gallon.	Fish and Olive Oils at per Tun of 252 Gallons.	Spirits Turpentine, per Ton of 20 cwt, or 8½ lb. to Gal.
s. d.	£ s. d.	£ s. d.	£ s. d.	s. d.	£ s. d.	£ s. d.	£ s. d.
0 0¼	0 5 2	0 5 3	0 5 5⅝	4 1	50 16 3	51 9 0	53 16 0
0 0½	0 10 4	0 10 6	0 10 11	4 2	51 17 0	52 10 0	54 18 0
0 0¾	0 15 6	0 15 9	0 16 4	4 3	52 17 9	53 11 0	56 0 0
				4 4	53 18 6	54 12 0	57 1 11
0 6	6 4 5	6 6 0	6 11 9	4 5	54 19 3	55 13 0	58 3 11
0 7	7 5 2	7 7 0	7 13 9	4 6	56 0 0	56 14 0	59 5 9
0 8	8 5 11	8 8 0	8 15 8	4 7	57 0 8	57 15 0	60 7 10
0 9	9 6 8	9 9 0	9 17 8	4 8	58 1 5	58 16 0	61 9 9
0 10	10 7 5	10 10 0	10 19 7	4 9	59 2 2	59 17 0	62 11 9
0 11	11 8 2	11 11 0	12 1 7	4 10	60 2 11	60 18 0	63 13 8
1 0	12 8 11	12 12 0	13 3 6	4 11	61 3 8	61 19 0	64 15 8
1 1	13 9 8	13 13 0	14 5 6	5 0	62 4 5	63 0 0	65 17 7
1 2	14 10 4	14 14 0	15 7 5	5 1	63 5 2	64 1 0	66 19 7
1 3	15 11 1	15 15 0	16 9 5	5 2	64 5 11	65 2 0	68 1 6
1 4	16 11 10	16 16 0	17 11 4	5 3	65 6 8	66 3 0	69 3 6
1 5	17 12 7	17 17 0	18 13 4	5 4	66 7 4	67 4 0	70 5 5
1 6	18 13 4	18 18 0	19 15 3	5 5	67 8 1	68 5 0	71 7 5
1 7	19 14 0	19 19 0	20 17 3	5 6	68 8 10	69 6 0	72 9 4
1 8	20 14 9	21 0 0	21 19 2	5 7	69 9 7	70 7 0	73 11 4
1 9	21 15 6	22 1 0	23 1 2	5 8	70 10 4	71 8 0	74 13 4
1 10	22 16 3	23 2 0	24 3 1	5 9	71 11 1	72 9 0	75 15 3
1 11	23 17 0	24 3 0	25 5 1	5 10	72 11 10	73 10 0	76 17 3
2 0	24 17 9	25 4 0	26 7 0	5 11	73 12 7	74 11 0	77 19 2
2 1	25 18 6	26 5 0	27 9 0	6 0	74 13 4	75 12 0	79 1 2
2 2	26 19 3	27 6 0	28 10 11	6 1	75 14 0	76 13 0	80 3 1
2 3	28 0 0	28 7 0	29 12 11	6 2	76 14 9	77 14 0	81 5 1
2 4	29 0 8	29 8 0	30 14 10	6 3	77 15 6	78 15 0	82 7 0
2 5	30 1 5	30 9 0	31 16 10	6 4	78 16 3	79 16 0	83 9 0
2 6	31 2 2	31 10 0	32 18 9	6 5	79 17 0	80 17 0	84 10 11
2 7	32 2 11	32 11 0	34 0 9	6 6	80 17 9	81 18 0	85 12 11
2 8	33 3 8	33 12 0	35 2 8	6 7	81 18 6	82 19 0	86 14 10
2 9	34 4 5	34 13 0	36 4 8	6 8	82 19 3	84 0 0	87 16 10
2 10	35 5 2	35 14 0	37 6 8	6 9	84 0 0	85 1 0	88 18 9
2 11	36 5 11	36 15 0	38 8 7	6 10	85 0 8	86 2 0	90 0 9
3 0	37 6 8	37 16 0	39 10 7	6 11	86 1 5	87 3 0	91 2 8
3 1	38 7 4	38 17 0	40 12 6	7 0	87 2 2	88 4 0	92 4 8
3 2	39 8 0	39 18 0	41 14 6	7 1	88 2 11	89 5 0	93 6 8
3 3	40 8 10	40 19 0	42 16 5	7 2	89 3 8	90 6 0	94 8 7
3 4	41 9 7	42 0 0	43 18 5	7 3	90 4 5	91 7 0	95 10 7
3 5	42 10 4	43 1 0	45 0 4	7 4	91 5 2	92 8 0	96 12 6
3 6	43 11 1	44 2 0	46 2 4	7 5	92 5 11	93 9 0	97 14 6
3 7	44 11 10	45 3 0	47 4 3	7 6	93 6 8	94 10 0	98 16 5
3 8	45 12 7	46 4 0	48 6 3	7 7	94 7 4	95 11 0	99 18 5
3 9	46 13 4	47 5 0	49 8 2	7 8	95 8 1	96 12 0	101 0 4
3 10	47 14 0	48 6 0	50 10 2	7 9	96 8 10	97 13 0	102 2 4
3 11	48 14 9	49 7 0	51 12 1	7 10	97 9 7	98 14 0	103 4 3
4 0	49 15 6	50 8 0	52 14 1				

It is made from, say, 1 gallon paraffine, ½ gallon water, 1lb. soft soap, and 2lbs. naphthaline. The soap is boiled and dissolved in the water; the naphthaline is melted until wholly liquefied, when the paraffine is added, and the whole finally stirred till cold. For furniture and boot creams a quarter of a lb. of paraffine wax, melted with the naphthaline. It may be scented with 1 fl. drachm of citronelle or mirbane oil, and coloured with analine.

Oils for Lubricating.—See *Lubricating Oils.*

Oilstone. — (See also *Hones.*)—A slab of fine-grained stone, used for imparting a keen edge to tools, and so-called because oil is used for lubricating its rubbing surface. The finest are made of *novaculite*, a fine-grained variety of quartz.

Black Oilstone is a variety of Turkey stone. *Oilstone Powder* consists of pulverised oilstone, sifted and washed. *Oilstone Slips*, small pieces of oilstone cut into different shapes so as to adapt them to the surfaces of the various objects on which they are to be used in polishing.

Oil of Vitriol.— See *Vitriol.*

Okra, Ochro, or **Okro.** — The unripe fruit or pods of *Hibiscus esculentus*, a tropical plant belonging to the *Malvaceæ*, known as *Bendi-Kai* in Southern India, as *Gombaud* or *Gombo* in the French colonies. It is called *Okra* in the Northern and *Gumbo* in the Southern States of America. The plant is an annual, native of the West Indies, but is now cultivated throughout the tropics, Southern States of America, especially in Florida, and around the Mediterranean. The edible portion is a tapering 5-10 angled loculicidal capsule, 4 to 10 inches long, and has been introduced into this country as a vegetable in tins, mainly from the United States, where the fruit is greatly in favour, and is used particularly in thickening soups. Boiled okras, served with proper dressing, are very palatable. The fruit forms the chief component part in the dish called "Gumbo," consisting of a highly-flavoured stew, with fowl, fish, beef, or oysters.

In Florida the seed is sown late in the spring in rich soil.

The fruits are commonly preserved for winter use by cutting them in halves and hanging them up to dry. The ripened seeds, when roasted, make a good substitute for coffee. Another favourite dish is made from the young and tender pods, stewed and seasoned with salt and pepper, and served with melted butter. (See also *Gumbo.*)

Old Oil. — A kind of oil chiefly used by watchmakers, opticians, etc. It consists merely of olive oil that has been purified and rendered more limpid.

Old Tom.—See *Gin.*

Oleine or **Elaine.**—The fluid portion of fats and oils, after the stearine or solid part has been pressed out or otherwise removed. (See *Margarine* and *Margarine-Cheese.*)

Olibanum Gum.—Ar. *Looban;* F. *Oliban;* G. *Weihrauch;* It. *Olibano.*

The large quantity of this gum-resin which is consumed annually in this and other countries, and the uses to which it has been put from the earliest days of history, gives it a prominence which is not shared by many other drugs that seem more necessary to man. Olibanum is, in fact, the "Frankincense" or "Thus" of the ancients, and its use at religious observances has passed down through many centuries to the present time. The best is obtained in India from *Boswellia thurifera*, but in Europe from the spruce fir and other species.

It is imported in chests of 4 cwts., the best from the south of Arabia, and the cheaper are now almost exclusively used as incense in Roman Catholic and high Episcopal churches, and these latter form the bulk of the imports into this country. Most of the olibanum sold for the purpose of burning at religious rites is of a low quality, only the wealthier churches using the superior article. Good olibanum is in semi-transparent tears of a pink shade, brittle and adhesive when warm; its odour is very agreeable, its taste pun-

gent and aromatic; it flames for a long time, and is not easily extinguished. It is very obnoxious to mosquitoes and other insects. The East Indian or stalactitic product is an inferior sort. In addition to its use as incense, olibanum finds employment in medicine, the finer and more expensive sorts being used in the unofficial plasters, for fumigating purposes, and to some extent as a substitute for the balsams of Tolu and Peru.

Olives.—Ar. *Zitoon;* Fr. *Olives;* G. *Oliven;* It. *Ulive;* Port. *Azeitunas;* Sp. *Aceitunas;* W. *Olewydd.*

OLIVES.

The culture of these is very widespread, and the varieties are very numerous. As sold in this country, they are the unripe fruit of the shrub-like tree, *Olea Europæa*, which has been extensively cultivated all round the Mediterranean from time immemorial, also throughout South America and Mexico, also in California and Florida. Spain has about 3 million acres in olives, Italy 2½ millions, and France about 300,000. There are numerous varieties in Italy alone, from Southern Piedmont down to Sicily, along the Mediterranean and Adriatic slope. In ancient Greece the tree received all the honours, and had an almost sacred character. It is a many-branched evergreen, similar to the lilac and ash, grows 20 to 40 feet high. It commences to flower at the base of its foliage, its flowers appearing singly at the end of the twigs, and it is very hardy and long-lived, some writers crediting it with a longevity exceeding a thousand years. In some countries it grows 60 feet high, with a base diameter of 4 feet. The crop of fruit is very uncertain, but it yields best when the trees flower early in the spring, and in poor and dry, calcareous and sandy soils, loose and light, containing silex, lime, soda, and potash, not too elevated above sea level, and will grow on land that will not afford sustenance to any other fruit-bearing tree. All it requires is warmth and good drainage, with about fifteen inches of rainfall in a year, but no irrigation. The olive tree is remarkable for also yielding a fixed oil from the pericarp instead of from the seed. Its most dreaded enemy is the small fly, *Dacus oleæ*.

For some years past the olive trees in Italy have been affected with a yearly recurring disease, so that the olive harvest has been excessively meagre, and supplies have had to be imported from Tunis, Spain, and Southern France for Italian consumption. The disease first appeared in Italy in 1889; since 1891 it has also affected the olives of the South of France; those in Spain and Tunis are said to be still untouched. The small round spot on the fruit which indicates the presence of the disease is called by the peasantry "the peacock's eye." The scientific examination of the phenomenon has detected a minute fungus (*Cycloconium oleagium*) as the only cause of the disease. The two kinds of olives most commonly cultivated in Europe are the French or Italian, with narrow, willow-like leaves, of dull green colour on the upper side, and silvery below. This species produces the more bland and agreeable oil. The other are Spanish varieties, with much broader leaves and coarser produce.

The olive crop is one of the most important about Cadiz. Two kinds are

produced—the "Queen's," or edible, and the "Manzanilla," or oil-producing. The former are gathered during September and October before the fruit is ripe, and then pickled. They are quite green, and of large size, and are mostly sent to the U.S.A. for eating. The Manzanillas, or small, coarse olives, are chiefly used in Spain and the Spanish colonies for making into oil, and are not gathered until November. The time, however, at which olives ripen varies a little, according to locality and the varieties cultivated.

In Andalusia, when intended for pickling, they are picked between the middle of September and middle of October, because at that time the fruit has reached its full size, though yet hard and green. When the fruit is wanted for its oil the harvest is from November to January.

A common mode of gathering is by knocking the fruit down with sticks, but careful growers pick by hand, which is slower, but the fruit is obtained in a better condition, for they become worthless for eating if bruised.

Table Olives.—There are also two methods of pickling. By the first, which is a very slow method, the freshly picked olives are placed in water, which must be changed every day for a fortnight, so as to get rid of bitterness. The olives are then usually put into old wine or brandy barrels, with a pickle of sea-salt and water consisting of 9° Beaumé. A most essential point is that the water used be the softest and freshest possible. At the bottom a layer of olive twigs and leaves is first placed, which protects the fruit from injury by pressure, and on the top of the fruit another similar layer is placed, care being taken to have this layer well covered by the brine. The whole is kept down by oak staves, carefully weighted with bricks or stones, all of which must be kept scrupulously clean, as any noxious taste or flavour will affect the olives, and the vessels are finally covered with a cloth or tarpaulin to exclude dust. They will keep quite sound in this state for two years.

By the quicker process, as used at Malaga, the fruit is put in a solution of caustic soda (say, 2½° Beaumé's areometer for large olives, or 3° for Manzanillas) to soak for 9 hours if wanted for consumption within a month; but only for 6 hours if to be kept a longer time. A few olives are sampled by cutting to see by the colour how far the solution has penetrated. The proper degree is half the thickness of the pulp, when the liquor is at once drawn off and replaced by fresh water, which must be changed quickly two or three times, and the fruit allowed to remain in the last water 24 hours. After this the water is drawn off, and the olives put into brine, as above shown; but by this method the olives will be ready for use in a month.

In either process the olives, after being once wetted, must never be kept out of water or exposed to the air more than is absolutely necessary, and in handling the fruit ladles of wood or tin are best.

In shape, the olive ordinarily resembles a smooth oval plum, varying in size from a cherry to a pigeon's egg, and in ripening turns from green to a dark violet colour outside, with white fleshy pulp; but there are large and small olives, pointed, oval, round, and curved fruit, and of all colours, from white to black, and from green to red. The flavour may be mild, sharp, or bitter, according to variety.

Being too bitter to be eaten as fruit, olives are, as already shown, either pickled while green and unripe, or allowed to ripen, and then made into oil. The ripe olives are gathered late in the autumn, and the soft kernel has changed into a hard stone, enclosing a savoury almond. The flesh is spongy, and its little cells are full of the mild oil, which pours out at the least pressure, so they have to be handled with great care. Indeed, the finest are not to be handled at all with the fingers; but, as stated above, with a large wooden or tin spoon.

Californian olives are of two varieties—the "Mission," a large meaty fruit, and the "Picholine," a small, plum, table fruit, richly productive of

oil. The latter ripens first, and when matured is about the size of a cherry, but longer, and dark green in colour; but they are a little inferior to "Lucques" and "Verdales."

The "Mission" is green, and is the sort usually found on the tables of restaurants and hotels in the United States.

Olive Stones, generally considered worthless, came into great notoriety in England about 1865, when it was discovered that large quantities of the ground stones were imported from the Continent for the adulteration of ground peppers. In Tunis, some 400,000 acres are devoted to olive culture, the cultivation having greatly increased since the French occupation, and there are now over 12 million trees, yielding about 20,000 tons of oil yearly, in addition to the olives eaten fresh or preserved. The commonest species of olive tree, which yields the most oil, is called by the Arabs "Shemlali." This is never grafted, but on to the Shemlali stock are often grafted other varieties, such as the "Mellahi," the "Nab," and the "Nab Reshid." The Shemlali is grown for oil, and the other sorts salted or bottled for export to Europe for table use.

Pickled Olives.—The usual way of pickling is to gather the olives when young and quite green, soak them in strong lye, or lime water, to render them mild and tender to the taste, and afterwards to soak them several times in clean water during a week or so: then, finally, pickle them in salt water to preserve their green colour, seasoning with clove, cinnamon, or other spices, and sealing up in bottles or casks. Large and fine-shaped fruits are preferred. The best come from Genoa, Tunis, and Marseilles. The olives of Tuscany and Lucca are esteemed the most on account of their light green colour and firm flesh; but large quantities of fair quality come also from Languedoc, Leghorn, and Naples. The *Queen olive*, of Spain, is very highly esteemed, and corresponds to the Italian *cucca*. In Italy, olives remain on the trees all the winter till February or March, but in France they are gathered in November and December. Jews are great consumers of both the fruit and oil of olives, especially during their holidays. Of French olives in barrels, Amellaux fetch about 24/- per cwt.; Lucques, known by their crescent-shaped stone, 20/-; and Verdales about 17/-. Spanish are much lower in price.

Olives are now cultivated in Northern Persia, which possesses some 130,000 trees, mostly in the valley of Roodbar, which is traversed by the present Resht-Jehran high road; some are grown in the district of Genjeh, nearer Resht; and in Taroum to the south; while others are to be seen on the right bank of the Sefid Road, around the villages of Kilishter, Viaieh (where there is a large oil factory), Rezehgah, Geldian Hurzevil, Mengil, and many smaller places.

In many warm countries the olive, both dried and pickled, is eaten before meals to create an appetite, and in districts where they are plentiful the small black and ripe fruits are eaten for their oil without any preparation; but in England olives are used, mainly at dessert, with wine, to restore the palate and aid digestion.

Salted Black Olives, in casks numbering several thousands, are now annually exported from Patras (Greece) to the United States, where that article seems to be growing in favour with the lower classes. Large quantities of the black Salona olives are exported to Russia and all parts of the Levant, but no Greek olives find their way to England.

For *Turkish Olives and Olive Oil*, the interested reader may refer to Consul Heap's Report, *Society of Arts Journal* of October 3, 1884, page 1,075.

Olive Oil. — Da. *Bomolje;* Du. *Boomöli;* F. *Huile d'Olive;* G. *Olivenöl, Baumöl;* It. *Olio d'Uliva;* Pol. *Oleiva;* Port. *Olea das Azeitomas;* R. *Derewannoe masslo;* Sp. *Aceite de Aceitunas;* Sw. *Bomolja.*

Marseilles is the greatest centre for the olive oil trade. It is sold under many names, such as *Tuscan Oil* or *Cream*, *Florence Oil*, *Gallipoli Oil*, *Huile de Provence*, *Languedoc Oil*, *Lucca Oil*, *Aix Oil*, *Virgin Oil*, *Salad Oil*, *Sweet Oil*, but it may almost be said that there is practically no *pure* olive oil sold in the shops.

The genuine article, however, is usually obtained by first slowly grinding the ripe olives to a pulp, the granite millstones being set wide so as not to crush the kernel; the pulp is then pressed in coarse woollen or rush bags, or preferably in circular-shaped sacks of palm-leaf, called "coussons" (cushions), which have a central opening and are about 18 inches in diameter. When filled, ten or twenty of these bags are piled on each other, the bottom of one bag closing the opening of that beneath, and the oil runs into a cistern of clean water, where it floats till required. This oil which flows from this first light crushing is of the best quality, and is called *Virgin Oil*. Sometimes it is dipped out of the mill, and if the fruit were not too ripe, the virgin oil should be clear as water with a slightly greenish-yellow tinge. It should also have a delicate nut-like taste, with little or no odour. When the fruit is not ripe enough the oil has an unpleasantly bitter taste, but when too ripe has an unguinous taste, and soon goes rancid. The first quality expressed is usually intended for food. The same pulp is again ground more severely and again pressed, when a second quality of oil mixed with some of the resinous oil out of the pips is obtained, suitable as a lubricator. A third and fourth are obtained after more grinding and soaking with boiling water, and pressure, but the last quality of oil contains much oil from the skins and pips, and is only fit for soap making and lubricating or similar purposes.

This treatment by boiling water gives the oil known as "*au chaud*." The total quantity obtained by the four pressings is from 40 to 50 litres from each 5 bushels of fruit, or 1 gallon of oil from 10 to 14 gallons of olives. These final pressings have, however, latterly been superseded to a great extent. The mass of oleaginous pulp and stones remaining was finally thrown away as waste. Recently a chemist (French or Swiss), named Deiss, has discovered a cheap way of extracting a coarse oil from this residuum, by means of a strong ley of diluents, of which sulphate of carbon is a prominent ingredient. This quality, called *Solfuro Oil* or *Huile d'Enfer*, owing to its nasty smell, is now the basis of "Naples Soap" and is used in others. It is also employed in wool-washing, cleaning silks and stuffs, and in connection with iron, steel, and wire work.

The quality of the oil depends much on the nature of the soil where the trees grow, on the kind of olive from which it is expressed, on the care which is taken in the gathering and pressing of the fruit, and likewise on the separation of the parts to be extracted.

In South Italy, when the olives are gathered they are stored up in heaps till matured, *i.e.*, turned a brownish black. They are then placed in the mill, called the "pontana," which consists of a large circular trough in which revolves the millstone, which is worked by about three or four people. When the olives are reduced to a crushed mass of oil and pulp, they are taken out and placed in circular bags made of a kind of rush, and placed in the press and squeezed, the oil running out into a large receptacle below.

After the oil has been thoroughly squeezed out, it has to be removed from the large receptacle and placed in stone cases or jars. This is the most serious business, for during the process—which is begun by the man who has to ladle out the oil making the sign of the cross over it—no one is allowed to speak; and should anybody venture to make a remark he is promptly silenced by the onlookers.

When fresh and good, olive oil is usually sweet, almost tasteless, of strong body but clear, free from "foot" or sediment, and of a bright gold colour with a slightly green tinge. The purest virgin oil, however, may be turbid when

first pressed, but it soon clears itself by simply standing in the tanks, which are often masonry cisterns underground. Although somewhat insipid, olive oil is one of the purest and most useful oils known, and is really a very valuable article. The annual import into this country of so-called olive oils amounts to about £1,000,000.

The production of olive oil is considerable. Spain is responsible for 80,000,000 gallons yearly; Italy, 35,000,000; France, 30,000,000; and California, some 20,000.

It is of the non-drying class (see *Oils*). The best olive oil has a specific gravity of ·916 to ·918; inferior qualities, of darker green colour, and somewhat rancid, about ·913.

Pure olive oil only begins to congeal at 36° or 38° F., at 20° it separates into two distinct substances—72 per cent. oleine, which is fluid, and 28 per cent. of a solid pearly substance consisting of stearine and palmatine, but olive oil is so extensively adulterated or substituted by animal, *cotton-seed*, and other inferior vegetable oils that it is very rarely met with in a pure state. Animal oils condense readily under the influence of cold, thicken and turn white or opaque in the lower part of the bottle, while pure olive oil retains its perfect transparency and uniform oily consistence under a much colder temperature; hence it may often be noticed on the retailers' shelves that the genuine oil glows clear beneath the glass in all weathers, while the adulterated oil has turned flaky with the cold, the solid substance going down with the fall of the winter thermometer.

Professor Goldberg states that olive oils begin to cloud at + 2° C., and deposit 28 per cent. of solid matter at —6° C. Cotton-seed oil sometimes becomes cloudy at 12° C., and sets firm at zero C. to — 1 C.

In order to remelt the congealed oil, the temperatures of 2° C. for olive oil or 12° C. for cottonseed oil may be exceeded by a few degrees. Both oils, cooled for hours at — 15° to — 20° C. and firmly set, take some considerable time to remelt. Mixtures of the two oils melt much more readily.

This country is supplied principally with oil from Leghorn and Genoa, known as Lucca or Tuscan and Florence Saw oil.

It is a curious fact that the best Italian oils are too rich and heavy for public taste in Northern countries, and, therefore, the French dealers, who understand preparing the article required, have established a reputation for so-called French oil, which is, in reality, frequently prepared from oils imported from other countries.

In the vicinity of Genoa great quantities are refined before being exported. Large shallow tin boxes are made with small holes pierced in the bottom; these are then covered with a sheet of wadding. Four or five or more of these boxes are placed in frames, one over the other; the oil, being poured into the top box, is allowed to soak through the wadding, and drop into the next one, and so on, until it gets into the last, when it runs off into tanks. The wadding absorbs all the thick particles contained in the oil when it comes from the mills, and leaves it more or less clear and tasteless. The oil thus refined is almost exclusively exported to Nice, in France, where it is put in bottles, and sent all over the world as "Huile de Nice" or "Provence." By means of steam machinery the husks are subjected to extreme pressure, and the oil thus extracted is called "Olio Lavato," and is employed for the manufacture of soap, whilst the refuse husks ("*amurca*") are either used in the country for fuel, or sold to Marseilles firms. (See *Soap stock*.) The southern parts of France, Italy, Candia, and Sicily yield immense quantities. In the country around Nice the harvest is divided into three periods of two months each. The first, usually in November, yields a high-coloured oil classed "premier" or "fine"; the second a straw-coloured type, called "superfine"; and the last a pale-coloured oil, called "*extra superfine*."

The first or "premier" is the thickest, and has the best flavour of the fruit, keeps longest, although not so suitable for exportation; the last (from April and

May gatherings), when the fruit has become ripe, is considered better, sweeter, and more limpid, but turns rancid sooner. The best qualities of Nice oils are inferior to none, but there is much mixed with cheap Bari oils, also "grain" or seed oils, such as poppy, rape, sesame, and cotton-seed oil, and there are several bogus manufacturers in Nice, that is, firms really non-existent there, but which merely have an address for the receipt of orders. The provinces of Naples most abundant in oils are Bari, Otranto, Liguria, Calabria, and Abruzzo. Large quantities of excellent oil, bright and clear, are annually exported from Gallipoli. Sicilian oil is very thin, inferior to Calabrian, and in soap-making has to be mixed with others; and Calabrian is inferior to the Gallipoli. Both Calabrian and Gallipoli have less "foot" and more colour and substance than those of Sicily. This superior quality of the *Gallipoli oil* may in some measure proceed from the nature of the soil; but it arises more particularly from better management in manufacturing and refining it. The district of the Dietro Marino produces the best oil of Calabria, and in goodness is very little inferior to that of Gallipoli. The Italian oil from Bari, though much inferior to the finest Tuscan, surpasses all others in keeping qualities, and is therefore the best for sardines. It is made from olives gathered early, say, November to February, while in the Riviera of Genoa, and in the South of France, the gathering only begins in winter, and is protracted until June. The olive is grown in fifty out of the sixty-nine provinces, the chief in order being Leece, Bari, Pouilles, Reggio, and Chieti.

Milazzo produces the greatest quantity in Sicily, then come Sciacca, Cefalu, Para, Mistretta, Pettineo, and St. Stephano. The oils from Milazzo and Sciacca are chiefly consumed in soap manufacture, those of Pettineo and Mistretta are the best for use with food, but their consumption is limited to Italy, as they have, like all oils produced in Naples and Sicily, a rank smell and taste. The oil from the Island of Candia is nearly similar to Sicilian, and fit only for soap-making, etc. The chief drawbacks which the olive oil industry suffers are the *Mosca olearia*, oil fly, or "*mouche huilière*" (an old scourge in many provinces, especially in wet seasons), and *severe* frosts while the fruit is maturing.

The part of France which affords the greatest quantity of oil is that of Provence.

It is there that the famous virgin oil of Aix is made, from olives about two-thirds ripe, and this excellent quality is usually exported from Marseilles. It is known in commerce as "*Bouches du Rhone*" oil, and fetches the highest price of any olive oil. The favourite olive of the district is called *caüon*, another sort is called *brun* (brown). The Union of Proprietors of Nice is a limited company, which binds itself to deal only in *pure* olive oil, and it has several plantations and presses in different parts of that district. The colour of the best oil of Aix (and of Tuscany) is greenish. The average yield of a tree in France is about 10lbs., and in Italy 15lbs. Spain has the largest area under olive culture, and produces about three million quintals yearly, of which some 30,000 come to England, but the quality is only inferior. About half of the Spanish product is grown in the provinces of Andalusia, Cordova, Seville, and Jaen; but being very little refined it has generally a peculiar flavour which is disagreeable to northern people, however pleasant to Spaniards. Morocco now exports olive oil from the Saffi district occasionally.

Olive oil does not very soon become viscid by exposure, as so many fixed oils do, hence the commoner sorts are used very much for lubricating purposes, but the better qualities are very extensively used as food in hot climates, taking the place of butter.

Cool storage is the best, as too high a temperature deteriorates the oil, and the bottles should on no account be exposed to the direct rays of the sun, or the contents will soon turn rancid.

Being highly nutritive, olive oils—particularly the Florence and Lucca oils of Italy and the French *huile de Provence*—are often regarded as more

wholesome than animal fats, and even delicate as cream.

Some excellent olive oil is also produced in Algeria and Tunisia, although the quality is not always uniform. It keeps well, and is coming into favour in France as a good sardine oil, being also much cheaper than Bari oil.

It is, however, doubtful whether any article of food is so extensively falsified as olive oil. Cotton-seed oil, highly refined, is the chief adulterant, but other seed oils are used, and even mineral oil. The latter being entirely indigestible is quite unfit for food.

The Italian Government authorises the following test for detecting cotton-seed oil:—Mix one part of nitric acid with two and a half parts of the suspected oil; place a clean copper wire in the mixture, and stir thoroughly with a glass rod. The oil, if it contain cotton-seed oil, will turn *red* in about half an hour.

By a Customs Tariff of 1898, the importation of cotton-seed oil into Tunis was forbidden, and this is undoubtedly having a beneficial effect upon the quality of the olive oil now exported from that region.

Adulterations may often be detected when the oil congeals at too high a temperature; also by the oil retaining air-bubbles, when shaken up, more readily than pure olive oil; if only 5 per cent. of other oil be present the consolidation is slower and less firm, but if 12 per cent. this floats on the top for several days. Sesame oil is reliably detected by the well-known sugar test, namely, by shaking 2 c.c. of hydrochloric acid, of specific gravity 1.19, with a lump of beet sugar about the size of a pea, adding about double the volume of oil, and again shaking. Then let it stand, and less than 1 per cent. can be thus detected. The colouration must be examined *immediately* after the separation of the acid, and if the aqueous layer be of a brownish red instead of a greenish gold, sesame oil is present. One method employed by chemists in analysing olive oil when cotton oil is suspected is to test it as to whether there is any sulphur in it. If there is it is taken as a sign that there is cotton oil present.

Rape oil and hemp oil are very difficult of detection in olive oil, and the chemists are still unable to recognise them with certainty.

Olive oils (reputed) are imported mostly in wickered flasks—"Florence flasks"—or pyramids, packed in half chests of thirty bottles each; but these very rarely contain pure olive oil. More reliance may be placed in the guaranteed oils coming in pipes, quarter casks, and in large jars, and classed as *Cream*, *Sublime*, *Superfine*, *Fine*, *Good eating*, *Ordinary salad*; or, when in bulk, the pale green, yellow, good merchantable, Mogadore, and Kernel oil.

To comply with the provisions of the Sale of Food and Drugs Act, dealers should protect themselves by selling these oils merely as *Salad*, *Lucca*, *Tuscan*, *Florence*, *Household oil*, *Flask oil*, etc., etc., instead of under the name of "*Olive oil*"; for, as already stated, pure olive oil is scarcely ever met with in this country, and the makers of falsified oil continue to baffle analysts.

All these oils should be kept closed up from air and light as much as possible. Samples in bottles, if often opened and exposed, soon deteriorate.

Olive Kernel Oil. — This is mostly extracted at Piræus, Greece, from olive stones, where there are five of these factories in all, whose total annual product is about 420,000 gallons of the oil. It is chiefly used there for soap making, for export to Turkey, Roumania, Servia, and Bulgaria; also to the United States.

Extracted from the seeds by carbon disulphide, this Kernel oil has a higher specific gravity than oil from the pulp of the fruit.

Another production sold as Olive Kernel oil is really the oil recovered by re-crushing and pressing or extracting the "press-cakes" (*bagasse*) from the first pressing of the olive itself, and which have already undergone partial oxidation.

Oloroso Wine. — (See *Sherry.*) —A kind of sherry, but richer and fuller bodied than what ordinarily passes under this name.

It is always recommended by Spanish doctors for the use of their patients, as being far more strengthening and much more wholesome than all reputed invalid wines.

Olla-Podrida. — A favourite Spanish dish, or *Hodge Podge*, consisting of a mixture of several kinds of meat, bacon, sausage, fowl, etc., chopped fine, and stewed with vegetables, particularly chick peas.

Onions.— Da. *Rödlög;* Du. *Uyen;* F. *Oignons;* G. *Zwiebeln;* It. *Cipolla;* Lat. *Allium Cepa;* Port. *Cebolas;* Rus. *Luk;* Sp. *Cebollas;* Sw. *Rodlok;* W. *Wynwyn.*

There are several varieties of this well-known bulbous plant, of the Liliaceous order, and native to the Levant. They are no more nutritious than turnips, but their cultivation is very ancient, and their consumption in this country seems to be increasing. The kinds grown in England, Holland, and other Northern countries are generally smaller in size, more juicy, pungent, and acrid than those of warmer climes, like France, Spain, Portugal, Italy, etc., and it may be noted, as a rule, that the further north onions grow, the stronger their flavour. The products of these warmer countries are not only larger and milder, but more succulent, sweeter, and better flavoured, hence they are, by the natives, often eaten raw, like apples, or with bread, and even in England they are for many purposes preferred to the home growths.

Strasbourg or *Deptford onions* (hardy and brown skinned) are a very highly esteemed variety. In this country, Warwickshire and Bedfordshire are the most noted for onion culture.

Bedfordshire Champions are a large good-keeping kind, of globular shape and brown skinned; the *Banbury Improved* is a fine white variety; *Cranston's Excelsiors* are handsome globe-shaped onions with small necks, and pale straw-coloured skins. The best-keeping onions are James's Keeper, and the Deptford if strong flavoured are desired.

Danver's Yellow are an excellent and very pretty variety. They are not particularly pungent, but good keepers.

Trebons are large and mild, also remarkable keepers, and often grown for exhibition purposes.

The *Nuneham Park* is a very large straw-coloured variety, and of fine flavour.

Other popular kinds grown in England are the *Brown Globe*, the *Blood Red*, the *White and Red Italians*, *Rousham Park Hero*, *White Globe*, *Zittau Giant Yellow*, *Giant Rocca*, etc.

The pretty "*Queen*" or *Silverskin*, a small variety, largely cultivated in Bedfordshire, excels all others for pickling purposes.

The *Potato Onion*, sometimes called the *Egyptian* or *Ground Onion*, is the variety most grown in Scotland. Its peculiarity is that it is a *perennial*, grows underground like the potato, reproducing itself by developing a numerous crop of bulbs. The *Welsh Onion*, or *Cibol*, produces no bulb, but only a thick fleshy stem (see *Leeks*).

Large quantities of small onions, both red and white, are imported in bags of about 1 cwt. each, from Holland, between August and Christmas, suitable either for immediate use or for pickling.

The importations of onions are very considerable, and in 1896 amounted to 6,085,505 bushels, valued at £681,879.

Immense lots of the larger growths come in cases from Spain and Portugal, between November and March, and from Rodosto, in Roumelia. Some of the Southern French growths also come from the Garonne valley, *viâ* Bordeaux. *Egyptians* are a bright firm medium-sized variety, and come in bags of about 108lbs. each, also in "half bags." These Egyptian onions arrive the earliest, but, being often shipped before fully matured, they will not keep long. In spring some of the

smaller Egyptians are sorted out and used for pickling, especially if Dutch crops are short.

Bermuda Onions. — These are exported to the extent of about 400,000 boxes (of 50lbs. each) yearly, and each producer is compelled by law to place his name or initials conspicuously on each package.

Onions are very stimulating, nutritious, antiscorbutic, and healthy. Eaten raw, they augment the appetite, cause thirst and eructation, and are slightly laxative. One small onion eaten every night before retiring is a well-known doctor's prescription for pains in the head. They also induce sleep, and are easily digested, particularly when boiled.

The vegetable is really one of the healthiest, but the unpleasant smell left in the breath after eating onions is temporarily objectionable. It is, however, neutralised by chewing a little parsley, or a cup of hot coffee will have a similar effect, and the breath will eventually be much sweeter than before the onions were eaten. They purify the blood, correct stomach disorders, and remedy constipation troubles. For croup, ear-ache, coughs, colds, sleeplessness, nervousness, worms, etc., onions provide safe and excellent remedies, either cooked or raw. The sweet Italian or Bermuda are the best for eating *au naturel*, their flavour being particularly delicate. In Tartary, onions, leeks, and garlic are regarded as perfume, and a Tartar lady tries to make herself agreeable by rubbing pieces of freshly-cut onion on her hands and over her countenance.

The offensive odour arising from handling or peeling onions may be greatly reduced by rubbing the hands afterwards with fine salt, and some say that holding a piece of steel between the teeth while peeling them will generally prevent weeping.

In chopping onions for cooking, the dry skin should first be removed, then a thin slice of the top and bottom (or they will be bitter), then cut into thin slices, dividing the onion, and afterwards cut crossways so as to form dice.

Onion bulbs are liable to be attacked by eel-worms, the larvæ of the onion-fly, smut, mildew, and mould. When stored they are also subject to putrefactive change, giving rise to a greenish slime on the surface.

Onions should be chosen symmetrical, well filled out, fine-fleshed, and small in the neck. They keep best if strung up, or in a cold dry place, and in latter case should be frequently turned over. Roped onions sell well.

For Onions, apply to Allen Jeeves & Sons, Seddington, Sandy, Beds.

Oolong or Oulong Tea. — A black variety, but with the flavour of green, grown in Formosa, and the staple export from Tamsui and Amoy.

It is dried like green tea, but with a little fermentation, and slightly scented. Oolongs are mostly used for giving flavour and scent to blended teas. They are very similar to *Darjeerlings*.

In the Chinese language "oo" means *black*, and "*lung*," or "*long*," means *dragon*. The growers or packers often import dust and inferior tea from the mainland to mix with this island-grown leaf.

Ootachon.—See *Eulachon Fish and Oil*.

Opachala. —See *Owala Seed*.

Opium. — Ar. *Rifyoon;* F. *Opium;* G. *Mohnsaft;* Hin. *Ufeem;* It. *Oppio;* Port. and Sp. *Opio;* Tur. *Madjoon, Adit*.

The dried juice of the unripe capsules of the white poppy, *Papaver somniferum*, and its varieties. These poppies grow wild in the South of Europe, and to some extent even in England, but the plant is more extensively cultivated in India, where on the Ganges there is a single tract 600 miles long by 200 broad. The Indian Treasury derives between five and ten millions a year as excise and export duties on opium. China also produces quite as much or more than India; and its cultivation, use, and export are largely increasing in China, particularly in Hankow, Chung Kiang, and

Kiukiang, while the imports from India are falling off. Siam imports from Singapore, and consumes about £100,000 worth yearly. *Persian Opium*, of an inferior quality, and much lower in price than the Indian, is growing rapidly in favour with the Chinese, while the purest Persian is sent to Europe. Opium is also cultivated extensively in Turkey and Egypt.

The bulk of the *medicinal* article is obtained from Asia Minor, as it has been for many centuries, and of the sorts in the English markets the best is Smyrna, in soft lumps covered with rumex seeds. It is very strong smelling, of bitter, acrid taste, and contains 6.9 per cent. of morphia. *Constantinople opium* is usually in flat cakes, covered

THE OPIUM POPPY.

in poppy leaf; it is rather dry and brittle, but goes soft and brown in the hand. *Egyptian* or *Alexandrian* is considered the poorest. It is hard, dry, with a clean, shiny fracture, but very feeble smell, while the Chinese and Indian products are chiefly used for smoking, eating, and drinking purposes.

The basis of opium consists of two alkaloids, morphine and narcotine, which should be present in the proportion of 10 per cent. of the former to 2.5 per cent. of the latter. The various preparations made from opium, besides confections, extracts, tinctures, etc., are syrups of poppies, decoctions of poppies, opium lozenges, opium wine, hydrochlorate of morphia and its solutions, acetate of morphia and solutions, morphia lozenges, opium plasters, etc., etc.

It is admittedly the most important of all medicines, and, although denounced by anti-opiumists, seems to be almost a necessity of life in malarious districts, not only in India and China, but even in the fenny parts of England. British agitators would do well to note the quantity of laudanum made up and sold every market day at Horncastle, in Lincolnshire.

In a small town in Norfolk, one chemist sells about 200lbs. a year, and another, about 180lbs.! Although a kind of "red rag" to many worthy persons in these lands, it is an invaluable specific against all kinds of pains, but its use is undoubtedly abused. If about one grain be taken, a feeling of *bien être* and general comfort is first produced, the mind then wanders and pictures, pleasant scenes, fantastic lights, weird fancies and figures float before it. There is an indifference to surroundings, and a partial insensibility to pain. Drowsiness now comes on, movement becomes impossible, pain is not felt, finally sleep with quiet breathing and steady pulse is produced.

If an excessive dose be taken, the sleep becomes so heavy that the person cannot be aroused.

So pleasant is opium that a craving for it is easily established. Whole nations, such as the Indians and Chinese, give way to it.

Opium is usually obtained from the poppies by scratching or by making several horizontal incisions on the unripe capsules about sunset three or four evenings in succession, and allowing the milky sap which exudes thereby to dry spontaneously. It is scraped off early on the following day into shells, and afterwards wrought into cakes or

blocks, which are then wrapped in leaves and packed in bales, in which state it comes to this country. In Syria a large amount of opium is produced at Nezile and north-east of Aleppo, and at Malatia, in Kharpouth. During August the peasants each morning, for several days in succession, make incisions into the capsules of the poppies. They collect the juice which oozes out from these cuts in glass platters. They then pour it into large terra-cotta receivers and dry it in the shade. It is finally wrapped up in ordinary paper and sold in little packets in the bazaars of Aleppo, about 80 per cent. of the export coming to England.

"Abbrari" opium, or the standard used for Excise requirements in British India, is prepared by continually stirring it in the sun until it attains the caking consistence of 90 degrees, when it is made up into cakes of about 2lbs. weight, and packed in chests of 60 cakes each; but if for China, the chests only contain 40 cakes arranged in two layers of 20 cakes each. The packing used is called "trash," and consists of parts of the poppy plant, such as broken stalks, leaves, and dried capsule heads, thereby preventing any other foreign matter coming into contact and spoiling the aroma of the drug. The final drying of the cakes is effected by storing separately in small earthenware cups arranged on wooden racks, which are constantly turned to allow the "shells" to dry evenly.

Opoponax.—The name given to a scent. It is prepared from the dried milky juice or fetid gum-resin obtained by wounding the roots of a plant known as *Opopanax chironium*, or *Pastinaco opoponax*, a native of the countries round the Levant, and which is grown in Persia, Turkey, and East Indies. Opoponax is imported both in granules and drops, also in lumps of reddish-yellow colour outside and white within, but the latter form is inferior, and generally loaded with extraneous matter.

It has a specific gravity of 1.62, and the acrid taste and odour of bruised ivy-leaves, while with water it forms a milky solution, and used to be employed in medicine as an anti-spasmodic. A perfumed myrrh, or balsam, is now often sold as "Commercial" opoponax.

Oporto Onions.—See *Spanish* and *Portuguese Onions*.

Orange Blossoms.—These are utilised in many ways. In their natural state as picked off the overcrowded orange trees, or gathered up from the ground underneath the trees from which they have fallen, the blossom is used to flavour drinks and sweetmeats. When distilled they yield the essential *Oil of Neroli*, and the water remaining becomes what is known in Italy as *Acqua nanfa*, or *Orange flower water*. Orange flower water is also produced from equal weights of blossoms and water, which yield on an average about one-fifth of the combined weights of the water and flowers, and *Acqua nanfa*, plus about six or seven decigrammes per 100 Kilogrammes of essential oil, that is from .006 to .007 per cent. In France, a spirit called Petit Grain is produced by distillation of the leaves. The bigarade or bitter orange tree is grown by French gardeners mainly for its "blossoms."

Candied Orange Blossoms are a very delicious sweetmeat quite common in some parts of Italy, but not often met with in England. The blossoms are steeped for 24 hours in cold water, taken out and re-washed; then spread out on linen cloth to dry. When nearly dry the flowers are spread at the bottom of white dishes, each blossom being separated from its fellows, and then they are sprinkled with double their weight of sugar, which is added at intervals during eight days, while they are frequently turned and kept in the shade, and finally once more exposed to the sun, whose rays dry them completely.

Orange Essence.—Like most other culinary flavouring essences, *Essence of Orange* is usually prepared by mixing a little of the essential oil of oranges in 15 to 25 times as much of rectified spirit. Of *Orange Oil* there are three kinds—sweet, bitter, and Tan-

gerine, value, say, 9/-, 18/-, and 35/- per lb. respectively, often falsified with rectified turpentine and paraffin.

Orange-flower Soap. — F. *Savon au Fleur d'Oranger.*

A fashionable toilet soap, usually made with about 6 parts of white tallow soap and 4 parts of pure palm soap, perfumed with a scent composed of 14 parts of oil of Portugal and 1 part of oil of amber. Another scent used for this soap is made 4 parts of oil of geranium and 5 of oil of neroli.

Orange Jelly. —F. *Gelée de Bigarade;* G. *Pomeranzen-Sulze.*

Orange Jelly may be prepared by boiling a pint of orange juice and the yellow rinds of three or four bitter oranges in a small bag. Stir well and skim occasionally, and when it jellies, strain, and add half-pound of white sugar with half-ounce of isinglass dissolved in a pint of water. Mix all together, and bottle before it cools, but do not cover till cold.

In factories a common proportion is 15 parts of bitter orange pulp, 18 parts of crushed sugar, and 5 parts of apple pulp. The pulps are first boiled and strained, and the latter finally boiled with the melted sugar till it forms a gelatinous consistency. The apple juice assists in giving it a stiff body, and does not injure the flavour.

Orange Marmalade. — F. *Marmelade d'Oranges.*

This is made from oranges and sugar, and differs slightly in its properties from jam, the orange being richer than the jam fruits in citric acid, and contains in addition certain flavouring bodies and essential oils in the peel. The chief qualifications of good marmalade are an aromatic bitterness, a mild acidity, a full body, and a bright transparency. These very much depend on the condition, character, and kind of oranges used. The best is made from Seville oranges—"Seville sours," as they are called; but good marmalade is also made from Malaga sours, Sicilians, and others, although they have not the body and flavour of the Sevilles.

Many of the larger manufacturers import their own oranges, and few branches of industry have grown so much these last thirty years as the manufacture of orange marmalade. The season commences in November, but the best is made after Christmas. Dundee used to be famous for the marmalade made there, but the stiffness of the makers in regard to prices, old method of manufacture, etc., seem to have lost to that town much of its prestige.

The fruit for marmalade should be nearly ripe, heavy, solid, and bearing a thick but not pithy skin. These oranges contain a greater proportion of juice, a larger quantity of fruity pulp, fewer pips, a more gelatinous body, and better keeping qualities than the large, coarse, and less dense varieties. Green, unripe oranges should not be used.

Let us follow the course of an orange in a modern steam factory. It is first unrolled from its tissue-paper wrapper, and carefully inspected to see it is perfectly sound. The small black spots are removed, and if perfectly clean it is dropped into one basket, if dirty into another, which goes to another department to be wiped with a damp cloth; or if it contain any black specks in its chinks it is thrown into a trough of water and scrubbed with a brush till clear.

It is next cut in two, transversely, and the juice squeezed out, when a girl takes each half-orange and presses the flat side against a revolving wooden rose, or dome-shaped revolving rasper, which clears out in a second all the pulp and pips, leaving in her hand the empty peel, "cap," or shell. This is dropped into another basket with hundreds of others, which are afterwards folded in fours so as to resemble a half-blown indiarubber ball, and thrust into the hopper of a shredding machine, where sharp circular knives spin round and cut them into innumerable thin rings, which drop into a drawer beneath.

While this goes on the pulp and juice have been put into another machine, which throws off the pips and pith, and sends the boiled juice into a large vat to cool. The rings or shreds of peel, or "chips," are then picked over, and

steam-boiled with water in tubs till soft, transparent, and mellow, the water being changed several times so as to remove any excess of bitterness. They are afterwards drained, and, when quite cold, added, with sugar and glucose, to the boiled juices.

The whole is next wheeled off to another boiling room, and in about seven minutes a ton and a half of marmalade is being filled while hot into pots, tumblers, teapots, custard-glasses, butter dishes, jelly moulds, or some fifty other fancy forms in which the housekeeper likes to be served.

These packages are next arranged on trays, which are piled on lorries, and are sent by railway and lift to a cool floor, where they are "nnished," that is to say, have the thin spirit-soaked paper headings dropped on the preserve, the parchment covers neatly tied round the top and trimmed, and the labels pasted on. When all this has been done by several nimble hands, any marmalade which has been split is washed off the jars, and they are wrapped and tied in covers and sent away on trolleys to be packed in the warehouse.

So perfect is the system in some factories that at the very time a crateful of oranges is being unpacked, the pots and glasses which will contain the marmalade they make are being sorted out, washed, dried, and dispatched on trays and trolleys, ready to meet the marmalade as soon as it is boiled.

The ordinary proportions for best marmalades are about 25 parts of fruit to 22 parts of Dutch crushed sugar.

In some factories the orange, instead of being cut in two as described above, is scored and peeled with a thin sharp-pointed knife, or the round end of an iron tablespoon. Each orange is scored in four quarters, by cutting through the peel but not entering the flesh, and the quarters of peel then easily stripped off.

Many grocers now make their own marmalades and jams. Cleanliness is, of course, an essential feature. The pans and other utensils should be not only washed clean but polished brightly.

In making marmalade the preparation of the pulp is of even more importance than the actual boiling. When the oranges arrive, carefully sort them, removing any that are unsound, and take, say, 1 cwt., and put into a tub of lukewarm water. Remove any little black specks with soft scrubbing brush; then if you have a revolving rose for abstracting pulp from peel, cut oranges in half; if not, mark off and remove peel in quarters (it will then be ready for the cutter), which boil till tender and drain the water off. Boil the dummies in pan with 3 gallons water, and pass through four-hole pulper; then turn the pulp and chips into mixing tub. They should now weigh about 160 pounds.

Then take 50lbs. sugar, and when dissolved add 40lbs. of pulp and 12lbs. of glucose. These proportions should be boiled 5 or 6 minutes with 60 lb. steam, and will produce an excellent quality.

As a rule, marmalade seems to suit best those palates which are not fond of sweet foods; and its tonic properties are so well known that it has long become quite popular at the breakfast table.

Home-made Marmalade.—In making this only a small proportion of the peel is cut up, the pulp is strained, and the juice taken from the pulp is boiled along with the cut peel and a little gelatine, just as it is done at home.

In making the ordinary marmalade all the white substance between the yellow rind and the juicy pulp is retained, while in the quality known as "Home-made" this is carefully removed, and, as already shown, the outer skin but sparingly used, giving the marmalade the appearance of jelly. The skins are usually cut in quarters by hand, and parboiled in barrels arranged in a line and having a steam pipe running along the top, from which branches pass down the centre of the barrels. Seeds and fibrous matter are removed by machinery, and Spanish bitter oranges are used. In the best qualities pure sugar is used; in the cheaper, inferior sugar, mixed with 10 to 20lbs. glucose for every 100lbs. of sugar.

Example:—Take the dummies of 1 cwt. oranges and put in pan with 20 gallons water, and boil fifteen minutes;

pass through bag and allow to drain, then take resultant juice, 6olbs. sugar, 12lbs. glucose, and 3lbs. of yellow peel (finely shredded). Boil up to jelly, and cool off when the shreds float.

To those who do not care for too much of the bitter flavour of ordinary marmalade, this "Home-made" variety is very attractive. Manufacturers call it "home-made," to distinguish it from the ordinary Scotch marmalade, where the entire orange is used.

It is often recklessly asserted that marmalades are adulterated with *turnips*, but this is a palpable absurdity, although against such bigoted convictions or assertions no arguments are likely to make headway. Let those wiseacres try their hand at such a boiling! It is true some manufacturers introduce considerable *glucose* into their marmalade, and, when oranges or sugars are dear, some probably use inferior fruit, or reboil old marmalade along with the new. Other makers sometimes put aside about two-thirds of the outside peel for candying, and if they do not prepare candied peel themselves, they sell it to those who do; or they may buy "dummies," *i.e.*, oranges from which the rind has been removed, and which are usually cheaper than in the complete state.

The citric acid in the fruit is so strong that it very rapidly affects iron, tin, zinc, and other metals, which give the marmalade a rusty, dirty cloudiness, and spoils the flavour. Copper, however, is not affected in this way, and leaves the marmalade bright and transparent.

Granulation is caused either by using too much sugar, or by over boiling, but this is now avoided by adding liquid glucose to the materials when boiling. Fermentation is usually caused either by insufficient cooking, unsound fruits, or careless and defective covering. The peeling of oranges is much facilitated by previously boiling them. The excessive use of glucose in preserves of all kinds is becoming scandalous. It is no use our large manufacturers advertising the cheapness of jams and marmalades so long as they are made up so largely of glucose, value 1d. per lb. This adulteration may cheapen the product, but is no justification as long as it cheats the consumer. We never see preserves "warranted free from glucose." Cheap marmalade is wanted, but not glucose.

Orange Peel.—The peel or skin of oranges is imported in two forms—the fresh peel in brine and in casks, and also in a dry state cut fine and almost crisp. A considerable quantity of dried bitter orange skin comes from Syria in packages of about 3 cwts. each.

Oranges. — Da. *Pomerantser;* Du. *Oranjen;* F. *Oranges;* G. *Pomeranzen;* Hin. *Narunge;* It. *Melarancie;* Mal. *Simaomamis;* Pol. *Pomeranczy;* Port. *Laranjas;* Rus. *Pomeran;* Sp. *Naranjas.*

Oranges and lemons are commercially classified as "*green fruit*" because of their being gathered while yet green in order to stand the voyage to this country. Oranges (*Citrus aurantium*) are now grown in nearly all warm countries, where the winter temperature does not fall below 40° F. Their original home was Burmah, whence they were taken to the Holy Land. They were introduced into Spain by the Moors in the 11th century, and thrive well in Italy, Spain, and Portugal.

England is too cold for the tree in winter, and the summers are too short to ripen the fruit, though in the 18th century it was commonly grown in conservatories, and as long since as 400 years ago the Carews of Beddington in Surrey cultivated orange trees in their garden until the great frost of 1739-40 destroyed them. It is on record that the first oranges brought to this country came from Spain as early as 1290. They were called the "*Poma d'Orange*," and were of the bitter (or "sour") variety. They were reintroduced by Sir Walter Raleigh in the 16th century, and were first planted in Australia, near Sydney, in 1788. The tree is a rather low branching evergreen, about the size of a cherry tree, with an upright smooth trunk, bearing a constant succession of leaves and clusters of flowers—the latter of a delicate white colour.

The oranges commonly imported into this country are known as the Blood or

Maltese (see p. 121), Bitter, Seville (or "Sours"), Jaffa, St. Michael, Navel, Mandarin, Tangerine, etc., and these are more fully described under their respective names elsewhere.

The yearly importations amount to about two millions sterling. London, Liverpool, and Hull are the chief ports, and the "season" may now be said to last all the year round, although November to March is the busiest period, owing to the immense arrivals from Valencia, Almeria, and Malaga. Fifty years ago the total importation was under 40,000 cases a year.

ORANGE.

The best come from Jaffa, St. Michaels, Malta, and Florida, but the greatest numbers come from Valencia. In fact, the best Spanish oranges are grown in Valencia, Seville, and Malaga, and there seems every probability that Spanish oranges by their immense quantities and cheapness will hold chief sway in England for many years to come. *Denias*, a well-known heavy juicy sort, of delicious flavour, and rich golden colour, are equally popular. The common sweet or China or *Noble* orange (*C. nobilis*) is a species very widely cultivated. There are several varieties, some very prolific, an ordinary tree often bearing 500 to 2,000 fruit. Even 20,000 have been known to be borne on a single tree in the Azores, and upwards of 10,000 is not uncommon in Florida.

The China orange is now being largely cultivated in Portugal in lieu of the round, thick skinned, and spongy kind so commonly met with in our shops and streets. It is a small fruit, a little over two inches in diameter, spherical, slightly depressed at the apex, deep yellow in colour, thin skinned, with minute oil cells, and very delicious when ripe. The tree is somewhat dwarfish, having small leaves about 1¼ inches long, and resembling those of the myrtle. The Satsuma or Japanese is a small juicy variety, rather larger, but very similar to the Tangerine and Mandarin, and, on account of its being so easy to peel and separate, is often called a "kid glove" orange.

The *Kumquat* (also Japanese) is from a dwarf tree, which bears very small fruit.

The *Majorca* orange is a seedless variety, ranking with the Maltese. The *Umbigo*, a large, sweet, and seedless orange extensively cultivated in Bahia, where it begins to ripen about May and lasts till September. The *Siletto orange* is another seedless species, very common and popular in Rio de Janeiro; when ripe it has a very sweet and delicate flavour. The *Egg orange* may be distinguished by its oval form.

Neapolitan or *Sorrento oranges.*—These Italian growths are a rough, thick-skinned variety, fairly large, but rather ugly shaped, although excellent in flavour and sweetness. They arrive in England about March, and are mostly sold by costermongers.

Bildah oranges are the principal variety cutlivated in Algeria. Attempts have been made to export oranges from Sidon and Tripoli to the United Kingdom, the quality of the fruit being fully equal to the Jaffa growths, but the production appears to be limited, and the keeping properties during a long voyage less to be depended upon than those of the Jaffa fruit.

Suntara oranges (*Sintra*, *Sungtárá*, or *Rungtra*) are a very loose-skinned Indian variety, allied to the Mandarin,

and growing on small trees in a semi-wild state about Calcutta, Sylhet, Nagpore, and Delhi.

Khattà oranges are also an Indian growth of *sour* variety. (See *Bitter oranges*.)

Zanzibar oranges are a variety of small egg-oranges, similar to those of Malta and Jaffa.

In Sicily orange culture has been almost superseded by that of lemons, but most of the oranges now exported from Messina are grown on the Italian side of the narrow strait that divides the island from the mainland, the best being grown in the province of Catania, about Aderno and Biancavilla, but very many excellent and mixed qualities are found in the province of Palermo, where they are distinguished as ordinary blood and sweet, or vanilla and mandarins. These, however, mostly go to the United States. *Bergamot oranges* have a pear-like fragrance, and it is from these the perfumer obtains his bergamot essence. *Paraguay* produces both cultivated and wild oranges in profusion, the Mandarin and Bitter, as well as the ordinary.

Oranges are considered very healthy fruit. They quench thirst, refresh the stomach, help to subdue fever, replace laxatives, and are exceedingly agreeable to most palates, but to be able to stand the necessary confinement in the ship's hold during the voyage to this country they have to be gathered when only about half ripe, and while on the turn from green to yellow, consequently, the flavour is far inferior to those allowed to ripen on the trees. In some countries they hang ripe for many months.

To keep oranges, lemons, etc., good, each fruit is usually wrapped in a piece of tissue paper or in the thin husk of Indian corn.

They have a power rarely possessed by other fruits, that of absorbing odours from the atmosphere. Blood oranges are especially liable to do this, and if placed in the same room with onions for several days will acquire a decided onion flavour.

California now raises over two million boxes yearly, generally of very large size, but somewhat lacking in flavour.

Seedless navel oranges from California have for some time been coming into the market, but few people are aware that they have within the last quarter of a century revolutionised the orange industry of the State. At first, not £5,000 was invested in the ordinary fruit, while now close on £9,000,000 is locked up in the cultivation of the seedless variety, which has been the chief factor in the growth of a dozen towns in Southern California, and has directly added about £9,000,000, and indirectly £12,000,000 more, to the taxable wealth of the State. The whole of the enormous crop of seedless fruit is traced back directly to only two trees grown from six slips which were sent by the United States Consul at Bahia, Brazil, to the Agricultural Department at Washington, by which they were, in 1873, given to Mr. Tibbetts, who had pre-empted a tract of Government land in the San Bernardino Valley. The two trees from which directly or indirectly all the seedless navel oranges have been obtained are still to be seen on the ranch on which they were planted in the town of Riverside, which has grown from a hamlet of less than thirty residents to a prosperous city of 14,000 people, with an assessed value of nearly £2,000,000. It is the greatest orange-producing locality in the world, some 16,000 acres of late being devoted to the fruit, and the produce being 1,600,000 boxes, whose value is close on £500,000 a year.

The cultivation of oranges has latterly been extended very much in the Bahamas and also in Australia. Very high qualities arrive from the latter region in September, and, as they usually realise good prices, the trade should grow.

The way to tell a good orange.—Big oranges are not good. They are all skin and fibre. If you want a "yellow cup of wine" buy small fruit; that is, fruit that runs 175 or 200 to the box. Weigh it in the hand and take the heaviest. Sweet, sound oranges are full of wine and sugar and very heavy. A thin, smooth skin is a good sign. Wide, deep-pored skins are unmistakable signs of a coarse, spongy article. When the commission merchant buys in a hurry he saves time by taking an orange between his hands

and squeezing it to death. If it runs a cup of wine he takes as much of the cargo as he needs; if it runs dry he cuts the price or refuses to trade. There is no surer way to tell the real value of an orange, mandarin, or grape fruit.

Oranges and lemons in cases, upon arrival in the London market, are classified and catalogued according to condition under no less than 13 gradations. The list starts with "ordinary," which are the worst, and the qualities and prices rise till "Extra choicest large selected" are reached. Large fine are usually about sixth on the list; but, unfortunately, these classifications are not to be implicitly relied upon.

Boiled oranges are sometimes offered for sale by fraudulent costermongers and small shopkeepers, but an orange that has been boiled, although it looks larger and better, is really of inferior flavour and almost worthless. They can generally be detected by the absence of any smut on the skin and by their cleanly and polished appearance.

Prices per Case and per Dozen.

Per Case of 420.	No. per 1s.	Per Case of 490.	No. per 1s.	Per Case of 720.	No. per 1s.
10/-	equals 42	10/-	equals 49	12/-	equals 60
10/6	,, 40	12/3	,, 40	14/-	,, 50
11/8	,, 36	13/7	,, 36	18/-	,, 40
14/-	,, 30	16/4	,, 30	20/-	,, 36
16/10	,, 25	19/7	,, 25	24/-	,, 30
21/-	,, 20	24/6	,, 20		

When oranges are sold by hawkers or the bulk is broken into and retailed in small quantities, 110 are allowed for the 100, but nothing beyond that.

Orange Water.—This is a favourite perfume made by distilling orange blossoms with sweet wine or other spirit, and separating the neroli oil.

The petals off the blossoms of orange or lemon that fall off and cover the ground as soon as the fruit appears are collected for this purpose. Most of it is made in Italy, but the best quality in France.

Orange Wine.—(See also *Unfermented Wines.*)—A vinous liquid of a golden sherry colour, generally made in England, by the fermentation of the fresh peel in sugar and water. It commonly contains 10 to 12 per cent. of alcohol, and possesses the strong taste and aroma of the bitter-orange peel.

In the French colony of Martinique large quantities of orange wine are made, which finds a ready sale in Turkey and Russia.

Orangeade. — A cooling drink made in the same way as lemonade, and very similar to sherbet, lemon kali, etc., only with orange juice in place of lemon juice, although a flavour of lemon is often added. It is easily made by macerating sliced oranges in water (cold or hot) for a few hours, and then sweetening; or,

Mix 1lb. icing sugar, 12 grains powdered orange peel, 4 ozs. each of tartaric acid and bicarb. soda, 12 drops of essence of lemon or citron, and 1 fluid drachm of oil of orange peel. The powders should each be well dried, and then thoroughly mixed together before sprinkling the essence over it, when it should again be well mixed and shaken through a small sieve.

Orchella Weed. — This term comprises several species of the lichen *Roccella; R. tinctoria*, or *R. triciformis*, collected in South America, Morocco, the Canary, Cape Verd, Azores, Zanzibar, Madeira, and Sardinian Islands; *R. fuciformis*, collected in Madagascar, Angola, Madeira, and South America, and other species. They yield a fine purple colour, and are mostly used for dyeing purposes. The red or blue liquid ammoniacal extracts are known as *Orchil* or *Archil*, the dry powder as Cudbear, and the alkaline solid preparation, made chiefly in Holland, as *Litmus*. The latter is well known as a test for acids and alkalies.

Orgeat or **Syrup of Almonds.**—F. *Sirop d'Orgeat.*

A cloudy, white syrup expressed from almonds and exceedingly difficult to prepare properly, but often imitated as follows. Take 1lb. of sweet and 1lb. of bitter almonds, and blanch them, beat in a marble mortar to a smooth paste, add the juice of half a lemon and a pint

of barley-water, and pass this through a sieve; next, with a little of the liquid beat up the residue of the almonds, till every particle is thoroughly mixed with the liquid, add another pint of barley-water, then strain and clear, and to every pint of liquid add 1¼lbs. of sugar and a drachm of orange-flower water and rectified spirit.

Orleans Plums.—See *Plums*.

Orleans Vinegar.—(See also *Wine Vinegar*.)—Orleans is justly celebrated for its vinegar. Weak, low, sour, or faulty wines, new or old, made from grapes, are sent to Orleans from all parts of France for making into vinegar. Some of the manufacturers insist that they use only the juice of the white grape, but in some cases white wine vinegar is made from red wine, bleached with animal charcoal.

These wines are mixed and put into special open vats, where they are soon reached by the bacteria of fermentation, and very soon the whole becomes vinegar.

Leading Manufacturers. — Dessaux fils, Orleans, France; sole agents for the United Kingdom, W. B. Fordham & Sons, Ltd., 36 to 40 York Road, King's Cross, London, N.

Ormskirk Gingerbread. — There are several recipes, but the following is an old one and a good one:—Get 4lbs. flour, 2lbs. sugar, 2lbs. treacle, 22 ozs. butter, 8 ozs. candied lemon (chopped small), 1 oz. ground ginger, and a small nutmeg (grated).

Mix the flour and powdered spices with the butter, then add the treacle, sugar, and peel, and finally divide into cakes and bake.

Orris and Orris Root.—Orris is a sweetly-scented powder, produced by pulverising the dried root of the same name (*Iris Germanica*).

The root is white, half-an-inch to an inch thick, of oblong form, and is mostly brought from Florence, in the neighbourhood of which city it grows spontaneously. When first taken out of the ground the root is encumbered with numerous fibres, which are cut off, and the root is afterwards dried. The best orris root is plump, heavy, compact, clean, very white, of a sweet and violet-like odour, and of a sharp and somewhat bitterish taste.

Osborne Biscuits. — Osborne, or Albert biscuits, as they are also called, are made of rich and sweet materials, somewhat similar to Arrowroot, Marie, or Oswego, circular in shape, 2 inches in diameter, by about ⅓ of an inch in thickness, and count about 60 to the pound. Retail price 7d. or 8d. per lb.

Oswego (Corn Flour).—A fine kind of flour prepared from Maize or Indian corn—in fact, only another name for corn-flour. It is wholesome and nutritious, and free from the strong taste which most people notice in Indian meal, but is about ten times the price of Indian flour. (See *Maize*.)

Oswego Tea. —A name for the dried leaves of *Monardo didyma* and *Monardo purpurea*, which are used for a tea infusion in some parts of North America. The plants resemble mint in appearance and odour. They are also stated to possess tonic, stomachic, and deobstruent virtues, and are often grown in gardens for ornament.

Otaheite Arrowroot or Pid.—See *Arrowroot*.

Otto or Attar of Roses (also known as *Rose Oil, Essence of Roses,* etc.)—*Otto* is a generic name for essential oils, and this highly-esteemed volatile oil is distilled in water from the fresh petals of various kinds of musk and damask roses, particularly *Rosa centifolia, R. damascena* and *R. gallica*. One white species, *Rosa alba*, is also used, but this is not so rich in essence, and is chiefly grown to form a dividing line between the different plantations. The centre of production for the most celebrated otto is Bulgaria, where on the confines of Kesanlik some 150 villages are engaged in the industry. The whole of this immense and richly wooded plain, standing about 1,300 feet above the sea, and shielded on the north by the great Balkan range, which rises 2,000

OTTO OF ROSES—(continued).

to 4,000 feet perpendicularly from the plain, is planted with rose trees.

The trees are grown 6 or 7 feet high in long borders or plots 100 to 200 yards long, with a cart road between each border, and when covered with roses the perfume exhaled is most exquisite. The roses are gathered by women and girls every morning and piled in great heaps. An acre grows about a ton and a half of rose petals, and these yield about £300 worth of essence. The essence is only obtained by repeated distillations, which are then concentrated, and the precious oil finally floats on the surface.

About 3,000 stills are employed in the above district, and some three or four thousand pounds of essence produced annually. When pure it is at a warm temperature a pale yellow liquid, with a specific gravity of 0.87 to 0.90; it solidifies at the ordinary temperature in England, but melts at 17° to 22° C.

The otto of roses from Southern Bulgaria and Turkey is, however, nearly always adulterated either with the oil of an Indian grass, geranium oil, spermaceti, or paraffin.

For some years a distillation of this costly perfume has also been carried on in Provence. This French product is greener in colour and has a greater consistence, but is inferior in quality and cannot compare with the oriental essence. A German oil of roses, of light green colour, prepared near Leipzic, is said to be finer than the Turkish otto, with an odour approaching mint. Although free from stereoptene in an ordinary temperature it takes the consistency of butter, which melts at 27° C. This Saxony oil has no action on litmus moistened with alcohol, but with difficulty is soluble in alcohol and glacial acetic acid.

In Bulgaria the presence of spermaceti or paraffin in otto of roses is detected by rubbing a small test bottle containing about 15 grains of otto between the hands, when the essence rapidly liquefies at a temperature of 18° C., whereas paraffin only melts at 32° to 50°, and spermaceti at 46°, hence these remain undissolved at the bottom of the bottle.

For the detection of geranium oil, G. Panajotow recommends the use of fuchsin and sulphuric acid, and it has been shown by O. F. Müller that a number of resin oils and lacs have the property of giving colour reactions with a solution of fuchsin decolourised with sulphurous acid. For instance, with geranium oil, it gives a fine blue colouration. To apply the test, two or three drops of the suspected oil are shaken with 2 c.c. of the re-agent. With pure rose oil a red colouration is produced after 24 hours, but with geranium oil a bluish violet colour is produced at once, and after two hours it becomes quite blue. Mixtures of the two oils in different proportions always give a blue colouration, even when the proportion of geranium oil is small. In this way the least admixture of geranium oil may be detected with certainty. The action of concentrated sulphuric acid may also be of use in detecting the geranium oil. Both oils give a brownish liquid when mixed with strong sulphuric acid, but in the case of rose oil this brown liquid forms with strong alcohol a clear solution, while in the case of geranium oil the addition of alcohol separates a flocculent yellow fatty precipitate.

Then as regards this co-called "geranium oil," it has recently been discovered that many of the Roumanians do not obtain it from the geranium plant at all, but that it comes from Indian ginger. They employ it by sprinkling it upon the rose leaves while in the still; the two essences then distil together. It has long been thought that the point of congelation was an infallible test, because genuine Roumanian essence of rose solidifies at from 63° to 68° C., while geranium essence only sets at a much lower temperature, so that any rose essence which froze below 61.25° C. has long been considered to be impure, but even this has been overcome by the fraudulent distillers.

After all it must be admitted that these chemical and physical tests seem useless for all practical purposes, and

the *sense of smell* is the best way. Therefore, dissolve one drop of otto in about 20 drops of rectified spirits, pour this into one ounce of warm water at 100° F., and shake well up.

A sharp nose may then readily detect any admixture of over 4 or 5 per cent. of "geranium oil" in the otto of roses. The finest otto is imported in tinned copper bottles, called "cappers," and known in Turkey as *Kurkoumas*. The oil sold in small gilt glass bottles is generally heavily adulterated with oil of geranium or ginger-grass.

Apply to C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Oucham.—A green variety of tea; a sort of *Young Hyson*.

Ounce.—A weight, the twelfth part of a pound troy or apothecary, and the sixteenth of a pound avoirdupois.

A *fluid ounce* is in medical use equal to a small wineglassful or an avoirdupois ounce. In avoirdupois weight an ounce consists of 437½ grains, and sixteen of these ounces make a pound avoirdupois; but in apothecaries' or troy weight an ounce consists of 480 grains, and twelve of these ounces make up 1 lb. troy.

Ouycou or **Piwarrie.**—An intoxicating beverage or beer made in Guyana and other parts of the tropics from the juice of the Mandioca or Cassava plant. (See *Mandioca.*) The milky and sour juice of this plant is extremely poisonous when fresh (see *Tapioca*), but after being inspissated by boiling, and then fermented with molasses, it yields the popular liquor known as Ouycou or Piwarrie.

Owala or **Opachala Seed.**—The seeds of *Pentaclethra macrophylla*, a huge West African leguminous plant growing to a height of 50 or 60 feet, and with enormously developed pods. It is grown extensively about Gaboon, and the natives mix the seeds with those of the Oba to make *Dika bread*, which is one of their favourite foods on the Niger. This "bread" is usually made into masses of a cone-like form sometimes weighing as much as 50lbs. In other districts the fresh seeds are roasted and eaten. They contain about 70 per cent. of a pale yellow fatty substance, called *Dika* or *Udika butter* or fat, and about 5 per cent. of sugar and tannin.

In the Gaboon this seed is called "Owala," but in the Eboe country "Opachala." (See *Dika Bread.*)

Owbridge's Lung Tonic.—(See also *Patent Medicines*).—This consists chiefly of balsam of tolu, oil of aniseed, and oil of cloves.

Ox-eye Beans.—Another name for Horse-eye beans, *Mucuna urens*.

Ox-gall or **Ox-bile.**—The bitter secretion or bile found in the livers of oxen. Used in a crude state, mixed with water, for scouring cloth, cleaning carpets, and other woollen goods. It removes grease and oil without injuring the colours.

When boiled with animal charcoal, and filtered, or otherwise refined, it is often used with gum by artists in spreading and fixing their water colours, and for coating blacklead or crayon drawings.

Oxides of Iron.—The rust of iron, largely used in making polishing powders, pastes, etc.

Oxtail Soup.—F. *Potage aux Queues de Bœuf*; G. *Ochsenschweif-Suppe.*

Made also from the tails of cows, calves, etc. The tails, being skinned, are cut up in pieces and stewed in water with a little ham and butter, also carrots, turnips, leeks, celery, savoury herbs; and seasoned with peppercorns, cloves, salt, and ketchup.

After selecting the tails, wash them well in clear, cold water, and cut up in small pieces, dividing the tails at the joints. Cook the pieces for 20 minutes in boiling water. The scum which forms on the surface while cooking should be carefully skimmed off. After cooking the requisite time, remove the knuckles and separate the meat from the bones. The tails should be cooked sufficiently so that this is easily accomplished.

Make a soup, for filling the can, as follows: To 25 gal. beef essence add

25 gal. jelly, 1½ gal. mushroom catsup and 4lbs. salt. Make 10lbs. flour into a thin batter; put it through a sieve and stir the mixture well while adding this batter slowly to it.

Season the soup with 8 oz. white pepper, 2 oz. ground nutmeg, 2 oz. mace, 1 oz. ground cloves, and 2lbs. sugar. Boil all the ingredients together in a jacketed kettle until the soup is ready to put into cans. In the 2-lb. cans put 4 oz. meat and then fill the cans with the prepared soup to weigh 2lbs. 1 oz.

Wipe the cans well and cap them, leaving the vents open, then place on racks and put into retort. Process the cans for 1 hour and 30 minutes at 3-lb. pressure, with retort exhaust closed. When the time required for this has elapsed, shut off the steam, flow off the pressure slowly and remove the cans. Stop the vents quickly and return cans to retort, where they are boiled off for 1 hour and 45 minutes at 9-lb. pressure. The cans are withdrawn from the retort at the end of the required time, and run to the shower room, where they are showered until cool. They are then sent to the wash-room and finally to the labelling-room.

Oxymel and Oxymel of Squills.—Oxymel is an aciduous preparation of vinegar and honey, mixed and used as an expectorant, demulcent, and gargle for sore throats, hoarseness, etc., and may even be swallowed. It is easily prepared by mixing, say, 3 oz. of acetic acid, with 4 oz. or 6 oz. of water, and stirring into 2lbs. of melted honey. Druggists often add other medical ingredients, and it is then called *oxymel of squills.*

Oyster Ketchup.—Simmer for ten minutes a pint of pulped oysters and a pint of white wine or old ale, with a little salt, pepper, and mace. Then strain and cool, adding a wineglassful of brandy, and it is fit for bottling.

Oyster Plant or **Salsify.**—A kitchen-garden plant of the genus *Tragopogon*, also identified as *Scorzonera hispanica;* and the *Steenhammaria marituna*, called Oyster plant from the leaves having the flavour of oysters. (See *Salsify*).

Oysters.—Da. *östers;* Du. *æster;* F. *Huîtres;* G. *Austern;* It. *ostrica;* Port., Sw. and Sp. *Ostras;* Rus. *ustritsa;* W. *Westras, Llymeirch.*

The British trade in oysters ranks in importance with that of herrings, and affords a livelihood to a numerous body of men. In Jersey alone as many as 250 boats have been employed, and 200,000 bushels annually exported from there.

Although only one species (*Ostrea edulis*), there are over fifty varieties of oysters. They usually grow in quiet bays near the shore, or in the mouths of rivers 12 to 50 feet deep, attached to rocks, stones, weeds, or other objects.

Oysters are plentiful off the coasts of Essex and Suffolk, and are taken by dredging; after which they are stored in pits provided with sluices, and after six or eight weeks' feeding they attain perfection, and are considered much superior to those fresh from the beds.

Oysters grown in cool climates are much finer flavoured than those of hot countries. They should not be bought unless they are alive; when dead the muscle binding the shells together is relaxed, and the shells open loosely.

All oysters have this strong muscle attached to the middle of each of its shells, by which it can open and close them at will, and this muscle has therefore to be cut through with a knife before a live oyster can be opened. The soft part of the oyster is the liver, and this, which forms the great mass of its body, is composed largely of glycogen—a kind of starch. It is this substance which in conjunction with a digestive ferment peculiar to the molusc renders oysters so largely self-digestive, they being ordinarily digested as soon as eaten, or very soon after, but they are not very nutritious.

It is an old saying and a true one that oysters are only good for eating in those months which have an "r" in their spelling.

They spawn in May, and are not fit to eat till about September.

English people after opening the oyster almost always leave it on the

OYSTERS—(continued).

flat shell for the liquor to drain away, but the Scotch, as well as the French and other nations, on the contrary, lay the fish in the hollow shell, by which the brine or broth is retained.

Natives.—The small English or Dutch "natives" raised and fattened in artificial beds are the best, the flesh is white and firm, with nutty flavour. They are small and thin shelled, and their rattle has an almost metallic ring. The contents of a dozen pair of shells should not weigh more than 4 ounces. The finest natives are said to be raised on the Kentish coast about Burnham, Whitstable, Rochester, Melton, and Colchester.

It is probably not generally known that the so-called Colchester oyster beds are situated at the mouth of the river Coln, off Pyefleet, the foreshore being the property of the Colchester Corporation. The income derived from these beds is considerable, ranging from —£3,000 to £5,000 a year, which is divided between the freemen of the Corporation, each of whom derives from £15 to £40 apiece from this source. The number of "natives" annually sent to market is not recorded, but over 12,000 bivalves were opened for the delectation of guests at one of the Corporation feasts, allowing an average of four dozen per man. To open these no fewer than sixteen men were employed from eleven o'clock in the morning till three o'clock in the afternoon.

Whitstable, however, is acknowledged to be the headquarters of oysterdom. They are fed on ground Indian meal, which they eat very greedily; but although meal and flour will feed, and even increase the weight of oysters, it has been found that after a time they sicken and die. Sugar is very bad, causing them to lose weight and perish rapidly. Oatmeal and flour have like effects.

Stagnation also is deleterious, causing the accumulation of excretory products and encouraging the growth of micro-organisms and the formation of scum on the surface of the water. They will, however, tolerate sewage, and can, up to a certain point, purify water contaminated with it, and they have been known to live a long time in water rendered opaque by fæcal matter.

Unfortunately, "natives" are becoming somewhat scarce, and fetch big prices. What seems to be wanted is an abnormal deposit of "spat," which rarely occurs. The last was about 30 years ago, and the wholesale price of Whitstable natives at that time was but 42s. a tub (3 imperial bushels). The prices have since risen to about £10 a tub, and they are retailed at about 4s. 6d. a dozen. Large numbers of so-called "natives" are not natives at all, but come into our markets from the Brittany coast, from Arcachon, La Tremblade, and Cancale, from the Schelat, from Marennes, and even from America, whence comes the *Ostrea Virginica*, which is an excellent substitute, and does not cost half so much.

Irish Oysters. The *Carlingfords*, once very popular, are now seldom heard of, but Connemara, in County Galway, possesses most excellent oyster fisheries. They cover over 700 Irish acres. Being at least 40 miles distant from any town, the water is remarkably pure.

Deep-sea White-faced Oysters are those dredged up in the Channel between France and England. Some of them, especially those of French production, have only one-tenth of meat, and are of the worst quality used.

The 24th annual report of the Local Government Board for the year 1894-5 contains a very interesting account by Dr. H. D. Buletrode, of the conditions under which oysters and certain other edible molluscs are developed or stored along the coasts of England and Wales. Many are grown in places open to sewage contamination, and impregnated with the well-known *bacillus coli*, and even the typhoid bacillus. In the above report the safe and the dangerous oyster layings are all fully specified, so that anyone concerned may, by ascertaining the place of origin, know whence to make their purchases. There can be little doubt that during the last four or five years many lovers of oysters have avoided them, but they may derive comfort from the experiments lately

OYSTERS—(continued).

made in removing young oysters from the Kentish beds to layings off the south-west of Ireland, in the pure waters of the Atlantic known to be entirely free from sewage. The oysters so transplanted now come up fully to the expectations of the promoters, being fat, plump, of delicious flavour, and most presentable to the eye. They are now being placed on the London market at a modest price. It is probable that with a fair demand from English consumers this successful experiment will open up a profitable industry to the coast population of Ireland.

Marennes, or Green Oysters, peculiar to the estuary of the Seudre, are known by their colour, or rather the green hue in the gills. A leading branch of industry of the Bordeaux district is that of oyster cultivation. The basin of the Arcachon is a cradle for the bivalves where they are reared and dispatched, either for immediate consumption or for education of an inverse kind, as the French taste is for green oysters, and the young oysters are sent in millions to Marennes, in the department of Charente Inférieure, to become green.

It appears the oyster-beds in that district are covered with a delicate green weed, *Navicula ostrearia*, of a perfectly wholesome and harmless nature, and on which the oyster rapidly fattens, its beard acquiring a dark green hue, and the bivalve itself an exquisite flavour, fetching double the price of oysters fed at Arcachon. Annual production of these green marennes oysters is 500 or 600 millions. They are regarded as a great delicacy, and highly prized by epicures; still, the exact causes of the colouration seem to be largely speculative, some say it arise from the iron solutions in which oysters at the mouth of the Gironde are grown, others think it is from the green monads and confervae on which they feed, as at Ostend, while it has been asserted that the tint is mainly developed by disease.

Examinations have shown that some healthy oysters are green from the presence of a natural pigment, others are green from the presence of copper in the tissues. The copper is probably absorbed from the sea-water, and such oysters are unfit for human consumption; but the best test is logwood, which gives a marked reaction in the presence of copper.

Pearl Oysters are a kind found in the seas in tropical regions, attached to rocks in very deep waters. They are too coarse for food, but are valuable for their pearly substance, which consists of abortive eggs that have been retained in the shell instead of being cast into the sea.

Bench Oysters is a term applied to oysters sold at oyster-rooms as an extra quality.

Scalloped Oysters.—Oyster baked with bread crumbs in a shell or tin, as was once the fashion with *Scallops*, another species of mollusc (*Pecten maximus*). These fish were very popular long before oysters were adopted, and may still be had from fishmongers. They are often sold as oysters, and when thinly sliced and dressed are not bad.

Blue Point Oysters are an American kind, originally cultivated off Long Island, but now also in many other places. They are small and fine flavoured, fetching 30s. to 50s. per 1,000. There are beds of these in the Menai Straits, off Bangor.

Saddle Rocks.—The first or largest kind of American oysters, and originally so-named after a rock on Long Island, but now exhausted.

There are 70,000 acres given up to the cultivation of oysters along the Long Island Sound front of Connecticut, and even this is only a fraction of the Chesapeake Bay industry. During the season, October 15th to March 1st, about 10,000 men with 1,500 boats averaging 50 tons each are engaged in dredging.

Prince Edwin Island Oysters.—The two most valuable qualities are the North River and Pownall Bay Oysters. They are sent from Charlotte Town all over Canada, Newfoundland, St. Pierre, and some even to England, the United States, Bermuda and West Indies.

Cove Oysters.—A name for oysters found and caught singly, or scattered among coves, creeks, bays, etc. They are usually rather large and fat.

Box Oysters.—These are a second quality, large and round in shape, about 3 inches wide and 5 long. Often 8 or 10 years old. They are so called from being formerly packed and sold in boxes.

Bushel Oysters.—A cheap and inferior quality sold by the bushel.

Ostend Oysters.—These for the greater part are not really Ostend oysters at all, but mostly go there from England (Colchester and Burnham), France, and the Netherlands. The Belgium port only feeds them a short time, and gives them its name. The other names of oysters comprise Burnhams, Callies, Chateaus, Colchesters, Commons (Kentish and Essex), Dutch, East Rivers, Merseas, Portuguese, Whitstables and Shoreham, or South of England. The latter are usually of large size, say, 6 inches in diameter.

Portuguese oysters are of a very voracious and prolific nature, and low in price, but uncultivated and coarse.

Living oysters have been known to trap mice and even rats, but perhaps the case of an oyster which caught three mice at one snap, as recorded by Mr. W. H. Marris, of Grimsby, in June, 1896, is the most remarkable on record. The oyster had been placed on a pantry floor, and opened its shell in the night. Three silly mice, smelling something to eat, popped their heads into the shell, and the oyster, resenting the intrusion, hastily closed upon all three, and choked them to death.

Oysters in Tins.—Tinned oysters are usually prepared by merely steaming them, and then hermetically sealing.

Eighty per cent. of the tinned oysters are prepared in Maryland, Baltimore alone "shucks," or steams and cans, about 12,000 bushels a day during the season.

Ozokerit, Cerisin, etc.— F. *Céresine; Cire minérale; Cire de Terre;* G. *Erdwachs;* Per. *Neftgil.*

Sometimes called *Fossil Wax, Mineral Tallow*, or *Wax*. Crude Ozokerit is a semi-fluid mineral-like resinous wax found in the tertiary strata and mostly in the close proximity to coal measures. It was first discovered about 1864, in some petroleum wells in the Austrian province of Galicia. The soil extracted from these wells was originally thrown aside as useless, and as it was very oily, and could not be heaped up, it caused the miners much trouble and expense to get rid of it; but on the discovery of a layer about six inches thick, and resembling beeswax, a Lemberg chemist examined it and soon demonstrated its value.

Ozokerit belongs to the series of hydrocarbon compounds which includes marsh-gas, petroleum, and paraffin, and is in fact very similar in appearance to the last. It has now long been mined extensively in Borislaw (Galicia), and Moldavia, and more recently in Utah and the Wasatch mountains. The chief centre of production, however, is at Borislaw, for it cannot be worked so profitably in the other districts. Borislaw is a rather peculiar town of 10,000 inhabitants, situated on the northern slopes of the Carpathians. About 100 individuals have rights to little bits of land over the ozokerit district, and each person mines his own little plot, with the help of his wife and children, and a workman or two. It is a precarious job, as explosive gases and eruptions of the soft ozokerit are frequent, causing the death of the miners. Mining is done in the most primitive fashion. The same bucket that takes up the mineral takes down the miner. He puts one foot in the bucket; the other he uses to guide himself going down. He is provided with a life-belt and line, and a Davy lamp—provisions for safety which the Government insists on, owing to the extremely high rate of fatality. It is not difficult to get out the ozokerit, a pick and shovel being all that is necessary. The duty of the wife generally is to work the ventilating arrangement. One variety of ozokerit has been found in the island of Swator-Ostrow, in the Caspian Sea, and is known there as *Neftgil;* while quite lately a yellowish-white deposit has been discovered in Southern Oregon. This latter is stated to be purer than one in Utah, also very light, and with no smell, but burns with a dense smoke.

The raw material is usually melted,

and run into blocks or loaves of the consistence of ordinary putty, and weighing 100 to 150 lbs. each. There are two or three qualities of these blocks. The first is transparent in thin sheets or fragments, and nearly pure, and its colour ranges from yellow to greenish brown, approaching black; but the outsides of the blocks are often of finer quality than the interior. The other qualities are all more or less earthy. Crude ozokerit is used to a considerable extent as an insulator for electrical wires; it loses about 33 per cent. in refining, but when it has been purified it takes the name of *Cerisin*, and is used for nearly all the purposes to which ordinary beeswax is applicable; it lacks, however, the stickiness of the latter.

Ozokerit has also since 1870 been used for candle making, for which purpose its high melting point (60° to 80° C.) renders it very suitable. It is, indeed, chemically identical with, and physically but little different from, paraffin wax.

Yellow ozokerine is the yellow wax obtained from Galician ozokerit, and is used in the compounding of ointment and pomades. Also, when highly purified, it is employed by French perfumers in the process of "enfleurage," *i.e.*, in the extraction of scents from flowers, etc.

Apply to C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

P

Packet Jellies.—See *Table Jellies*.

Packet Teas.—This subject must be approached with some discretion and forethought. A grocer may allow a man to talk politics to him, and even express theological sentiments, but Teas! and Packet Teas! Is not every member of the trade a specialist? The sale of these has been gradually coming into fashion since about 1860. Hornimans were in the field a little earlier, appointing confectioners as their agents, and assuring the public that their tea was "*Always good alike.*" Their success encouraged several others, and latterly the fight has been furious between "Packet" and "Loose" teas. So long as the custom was for large firms to pack under their own names only, and then seek grocers to sell it for them, not so much progress was made; but it has since occurred to retailers also to pack their own brands and blends, and the packet system has almost revolutionised the business. Instead of the trade being confined to a few large London houses, nearly every market town now contains one or more retailers, who not only pack, or get packed, their own teas, but lay themselves out for appointing smaller shopkeepers and others as their agents. No doubt a great impetus has been given to the system by the introduction of Ceylon teas, the necessity for keeping these airtight, and the facilities which certain growths offer of being packed with very little or no blending. Certain it is that the older-fashioned wholesale tea merchants have lost much of their prestige, and their position becomes harder to hold than ever. Their stock arguments that originals offer greater profits to the grocer, better field for his judgment, more opportunities in the market, and greater scope for his individuality and reputation, fail to charm. The big tea traveller, however, adroit and ready-tongued, no longer enjoys the high times of old. His champagne lunches and wine dinners, express journeys, and private hansoms, are not now ordinary luxuries in his daily life. A change has come round, and these gentry have to work hard and trot about very differently. The cream of the wholesale merchant has to go in advertising, the bluff and the wheedling must be done in print, and consequently the weekly trade papers team with tea stories. Of course, there are retailers who still disdain the handling of packet teas at all, but they are mostly of the

PACKET TEAS—(continued).

older generation. Old methods proverbially die hard, and we know how the serving a customer from three or four chests or canisters, topping out with a pinch or two of something super-excellent, has its peculiar charm, when gone through in an artistic and masterly fashion. The weighing, scale in hand, must be done to a nicety, a single particle more or less would have serious results! The mixing—done on the counter under the eye of the customer—calls forth marvellous gyrations and dexterity, and then the folding, the wrapping with the finest of papers and strings, and not forgetting the loop or parcel-carrier, to suspend it by. Some of the old tea-men undoubtedly possess æsthetical characteristics worthy of a Dickens to describe. But they are becoming scarce and their art an expiring one, and it is somewhat risky for a single-shop grocer to set up with the idea of buying original teas and blending his own. Some even say that the less tea is seen to be handled by some of the greasy and clumsy ones in the trade the better. However, this may be, profits nowadays are not what they were. Half a pound of shilling tea won't pay for elaborate old-fashioned ceremony, but it is certainly easier to get a good price, and a reputation for packet tea than for loose! Loose teas seem hopelessly low, the quality becomes worse, and there is no uniformity in the supply. Liquor strength and freshness always seem to be varying. Another evil of the loose tea business is that it is largely responsible for the hawking going on all over the country. Anyone can obtain inferior loose teas. But even the profits are only of secondary importance to the grocer to-day. His chief difficulty seems to be to hold on to the business at all, and the ascendency of packet teas over loose must be obvious to all. The public evidently prefer them, and the hawker cannot well compete in proprietaries; but if the general grocer does not make a good show of some speciality he may expect to lose customers. They will be drawn elsewhere—either to some catchy or well advertised packet, or to some hawker's basket.

Whether it may suit the retailer best to sell tea with other people's names or trade-marks upon it, or sell it under his own mark and name, is the main matter for his consideration, and is a question of great moment. Many grocers naturally object to become mere agents for the wholesale packers, and consider it wiser policy to invent for their own tea some attractive name, easily pronounced and remembered, and register it as their own trade-mark. The expense is only about 30s., and the Comptroller of the Patent Office, 25 Southampton Buildings, Cursiter Street, Chancery Lane, London, E.C., will, on application, forward a copy of the "Instructions to Persons who wish to register Trade Marks." Possibly, their own name and reputation already stands for something, in their own locality. They may, of course, register one or two words only, and then sell three or four qualities in different coloured packets. Many retailers who adopted this policy a few years ago, have gradually built up really valuable trades for their Registered Teas, and no one can deprive them of future sales, the products having attained celebrity as proprietary articles.

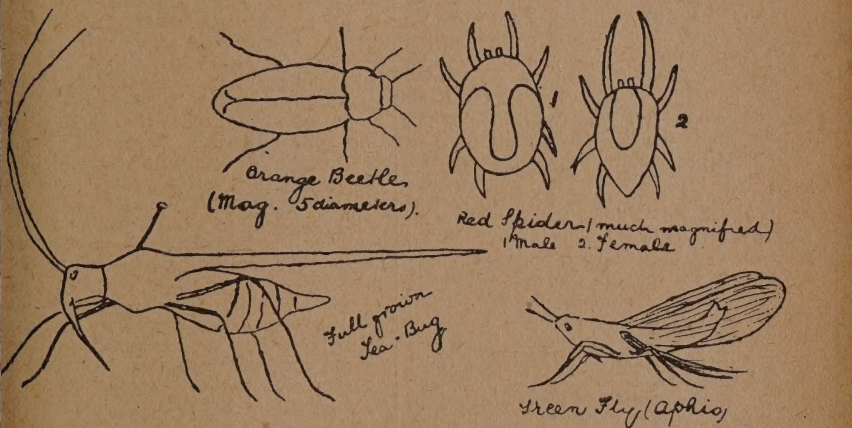
Other retailers think it more economical and convenient to sell packet teas which other parties have had the trouble and expense of blending, packing, registering, labelling and advertising, for in this case the retailer has no trouble in sampling or buying; he need have little or no money of his own laid out in his tea stock; and if the tea is not good, he is not to be blamed for it; but, of course, it places him at the mercy of the packers. They may alter prices and qualities, and in case of any slight disagreement may appoint other agents in the district, and thereby practically take the bulk of his tea customers away from him, and give them to his opponents. Some of the disadvantages under which a retailer of loose teas labours have been referred to under *Blended teas* (p. 119); but there are other considerations. A great deal too much has been said about the cheapness of tea in England. Optimistic philan

PACKET TEAS—(continued).

hropists, teetotal lecturers, and even Chancellors of Exchequer are sometimes apt to let their tongues run away vith them and pander to the public age for low-priced teas.

It is poor policy for retailers to flaunt rashy teas before the eyes of the ublic, they will in time get any shop bad name.

Too little is said about *quality*! People see bowls of alleged tea in he shop windows marked 10d. or 1s. er lb., and eulogised as "Sound Household," "Good breakfast," 'Superior," "Rich Syrupy," etc. Such bsurd descriptions are the veriest rot, nd everyone should know that no pure ea can be done at such prices. Good ea-leaves have to be picked from the ush by hand. Each bud has to be firing, drying, and curing, shrink to about 3lbs! Reckoning up the cost of growing and picking the leaves, the manufacture or curing, the boxing, the Customs duty, now 6d. per lb. in England, the brokerages, and carriage half way round the world, and, lastly, the expenses of handling, blending, packeting, and advertising it, not to mention intermediate profits and losses (although everybody knows that there are always *big profits on tea*!) How could all these items be provided for, and the tea retailed, perhaps in ounces, at 10d. or 1s. per lb.? The fact is—and it cannot be too widely known—that about half of such tea is merely dust, fannings, etc., consisting one-third of earth, one-third of mummified and powdered insects with their nests, which abound in tea-gardens; the other third may be



INSECTS IN CHEAP TEAS.

nipped off separately, and very carefully, because the whole bud must not be taken, the two bottom leaflets require to be left, or the bush would be spoilt for the next "flush"; hence, it is impossible for a person to gather more than about a dozen pounds of the green leaf per day. As shown elsewhere, the tea-pickers do not get big wages, but they have to be paid, and then these green leaves, during the faded leaves of ash, willow, and plum trees. But, of course, the cheap tea is not *all* dust; there are "tea pickings"—*i.e.*, sticks, stalks, and the old withered broken tea-leaves which have dropped from the bushes, and been raked into heaps in the plantations, along with the before-mentioned matters. This rubbish—for such it really is, is manipulated and rounded off by tea experts, and perhaps a few large

PACKET TEAS—(continued).

leaves are chopped or broken down to a decent size to help it pass as "tea." Spent tea leaves are also known to be collected, dried and mixed off, in wholesale quantities, so also are the denatured tea-leaves, which have been used or extracted in producing *theine* for the druggists. In July, 1898, the *Grocer's Monthly* had some special and very interesting articles "*All about Tea*," with a sketch showing a few of the "enemies of tea" which infest tea bushes, and it is through the courtesy of the proprietors of that enterprising periodical, that the reader may here examine their proportions.

The dried limbs of certain species of frogs, locusts, crickets, caterpillars, wasps, and hornets, might also have been included. Of course, these fragmentary remains are rarely observable by the naked eye, but they are there all the same; only being in a withered or roasted condition, and more or less broken up and mingled by machinery, the powerful lens or microscope of the entomologist is necessary to identify the dismembered particles. It is unwise of grocers to depend on the cursory examinations of the government officers, for it is notorious that rubbishy tea or tea-dust, refused by other countries, is regularly transferred to the United Kingdom, and eventually palmed off on to grocers for cheap tea consumers. It must not be supposed that respectable tea growers collect it, make it up for market and export it, but it is no less true there are individuals both in India and China—aye, in England too—who do so. Complaints have often been made and meetings held in Calcutta, to protest against employing brokers and others who engage in the business. It is certain there would not be such a run on cheap tea, if consumers only knew what they were imbibing, and it should be the business of the family grocer to let them know. There may be some persons willing to shut their eyes and swallow anything so long as the brew is black, "syrupy" and cheap, and which, when sugared and milked, passes as "tea"; but discriminating people, rich or poor, will, in most cases, prefer to pay more and get the genuine article, with leaves that may be seen and verified. Certainly, fine teas, value 2s. to 3s. 6d. per lb., are the most economical and satisfactory in the end, for a pound of ordinary 3s. will make 200 cups of far more enjoyable tea than the 50 cups made from a pound of the unwholesome shilling article.

Those suffering from heart or nervous complaints should, of course, be careful to drink only the very finest qualities of tea, and with a short infusion (say, three or four minutes), and avoid dark-coloured brews. *Theine* is the refreshing principle, and that dissolves out quickly, and is quite colourless. The packet tea-man should make these points clear to his customers. It is suicidal to give so much attention to the cheap and nasty qualities. Packet teas keep best when enclosed in lead with an inner lining of silky tissue paper. The packets should, above all, be *airtight*. Those best experienced in tea manufacture say, that if secured in air-tight packages and kept for two or three years, tea acquires a superior richness and mellowness obtainable in no other way; it loses its rasping and coarseness, and becomes remarkably soft and grateful to the palate; but if badly packed in improper paper or cardboard it is soon spoilt—the aroma of the tea is lost, or exchanged for the earthy flavour of paper. Ordinary paper, or even waterproof paper, soon imparts an undesirable taste to the tea, and should never be used. For samples of genuine teas, properly and attractively packed, and fairly well advertised, apply to any of the following:—

CAVE, JOHNSON & CO.,
WHITE HART COURT,
AND
ALDERMAN'S WALK, BISHOPSGATE,
LONDON, E.C.
Proprietors of (Established 1879.)
SPRING BLOSSOM CEYLON TEA.
Fragrant as the Flowers of Spring.
Sold in ¼ lb., ½ lb. and 1 lb. airtight packages at 1/8, 2/-, 2/2, 2/6 and 3/-.
"Loved of all Ladies."—"Much Ado," Act 1., Sc. 1.

Jackson Brothers & Co., 14 St. Dunstan's Hill, London, E.C.; Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool. (Sole agents for the "Household" Tea Company's Blends, and the "Wungacherra" Tea.)

Spencer, Turner and Boldero, Ltd., Blenders and Packers of the "*High Caste, Ceylon* and *Silver Packet Teas*," Lisson Grove, London, N.W. (See p. 462.)

Paddee or **Paddy.**—An East Indian and Malayan name for unhusked or rough rice.

When the husk has been removed by milling, the grain is there designated *bras*, or *akki*, and after it has been boiled it becomes *nasi*. (See *Ricemeal*.)

Paints.—(See also *Colours, Distemper, Water Paints*, etc.)—W. *Paent*.

A trade term given to pigments ground with oil to a thick paste, ready to be thinned down with oil or turpentine to a consistence adapted for application with a brush. On a small scale they are prepared by grinding the dry pigments with the oil by means of a stone and muller, but on a large scale they are usually ground in a colour mill.

There are several pigments, such as *King's yellow, Scheele's green, Verdigris, white-lead*, etc., which, from their poisonous character, cannot be safely ground by hand, except in small quantities at a time, and only with extreme caution.

To preserve mixed paints in pots or other vessels from "skimming over," or drying up, they should be kept constantly covered with water, or, what is better, with a thin film of linseed oil.

How to mix colours for paints:—

Black.—Lamp-black.

Blue.—Grind Prussian blue in turps, other blue, very fine, in linseed oil; mix with white paint to tint required.

Blue (*Sky*).—White and ultramarine.

Brown.—Red and black.

Brown (*Bright*).—Carmine, yellow, and black.

Buff.—Yellow, white, and Venetian red.

Chestnut.—White and brown.

Chocolate.—Black and Venetian red; or 1 part lamp-black and 24 parts Spanish brown.

Cream.—White, yellow, and Venetian red.

Distemper.—Indigo and yellow pink, mixed with whiting or white lead powder.

Drab.—White lead, with a little Prussian blue and French yellow.

Drab.—Umber, white, and Venetian red, white lead, Prussian blue, and lamp-black.

Flesh Colour.—White, lake, and vermilion.

Freestone Colour.—Red lead, Venetian red, French yellow, and lamp-black.

Green.—Blue and yellow.

Green (*Bright*).—White and green.

Green (*Brilliant*).—White and emerald green.

Green (*Dark*).—Black and light green.

Green (*Pea*).—Green and white, or 3 parts verdigris and 1 part white lead.

Grey (*French*).—White lead and Prussian blue, and vermilion.

Grey (*Pearl*).—White, blue, and black.

Grey (*Silver*).—Indigo and lamp-black.

Lavender.—Carmine, ultramarine, and white.

Lead Colour.—98 parts white and 2 parts lamp-black.

Olive.—Red, blue, black, and yellow, or blue, black, and red.

Orange.—Red and yellow; or orange lead and French or stone yellow.

Pearl.—Blue and lead colour.

Pink.—White and carmine.

Purple.—Carmine and blue, or white, blue, and lake, or white lead, Prussian blue, and vermilion.

Red (*Dark*).—English Venetian red, red lead, and litha.

Red (*Deep*).—Vermilion with a dust of Venetian red or red lead.

Red (*Light*).—Equal parts of red lead and Venetian red.

Rose.—Lake and white.

Steel.—Ceruse, Prussian blue, fine lac, and vermilion.

Stone.—Ninety-nine parts white lead and one part umber.

Straw Colour.—Chrome yellow and white lead.

Umber.—White, yellow, red, and black.

Vermilion.—Carmine and yellow, or red lead and rose pink.

White.—Use white lead to produce light tints.

White (*French*).—Purple and white.

Yellow, Bright (very thin floors).—White lead and linseed oil mixed with some French yellow and a little chrome yellow to brighten it, some red lead, burnt white vitriol, and litharge added, to give it a drying quality.

Yellow (*Dark*).—French yellow and a little red lead.

Yellow (*Dark*)—French yellow, Prussian blue, Turkey umber, and burnt vitriol.

Yellow (*Light*).—French yellow and white lead.

Yellow (*Light*). — French yellow, white lead, and red lead.

Colour Harmony.—Red and violet do not accord well.

Orange and yellow accord incomparably better than red and orange.

Orange and green do not accord well.

Orange and violet accord passably.

Yellow and green form an agreeable combination.

Greenish yellow and violet blend nicely.

Green and blue produce an indifferent effect, but better when the colours are deep.

Green and violet, especially when light, form a combination preferable to green and blue.

Orange yellow, when placed by the side of indigo increases its intensity, and *vice versâ*.

Red and green intensify each other.

Yellow and indigo combine perfectly.

Red and orange do not accord well.

Red and yellow accord pretty well, especially if the red is purple red, rather greenish than orange.

Red and blue accord passably, especially if the red inclines rather to scarlet than crimson.

Blue and violet accord badly.

When two colours accord badly together, it is always advantageous to separate them by white.

Black never produces a bad effect when it is associated with two luminous colours.

Black and white sensibly modify bright colours.

While grey never exactly produces a bad effect in its associations with two luminous colours, yet in most cases its assortments are dull.

Blue, when placed by the side of orange, increases the latter's intensity, and *vice versâ*.

A very useful table of over 300 colours and tints, and how to make them, is published in the "*Oils, Colours and Drysalteries Year Book*," at 37 Shoe Lane, London.

Paisley Flour is a special preparation made with Brown and Polson's Corn Flour, guaranteed pure and wholesome, to be used with ordinary flour in the proportion of one part of the former to six or eight of the latter, and fulfilling all the functions of a high-class leavening agent. Makes bread digestible even when new.

Palaver Sauce.—Prepared in Central Africa from the leaves of the *Baobob*, and flavoured with pungent spices.

Pale Ale.—(See also *Ale*, *Burton Ales*, etc.).—India pale ale, or Bitter beer, as it is more often called, has during the last 50 years, been the fashionable beverage of town and country. As the luscious sweet brewed at Edinburgh has been called the Burgundy of Scotland, so may the cool amber-coloured, sparkling and wholesome pale ale of Burton-on-Trent be named the Champagne of England. The pint and quart bottles of Bass or Allsopp pervade the world. The chief brewers of Burton have been transmuted from poor men into millionaires. The first pale ale was brewed in a teapot. In 1822, Mr. Allsopp, while dining with a director of the East India Company, complained of the difficulty he experienced in continuing the supply of his ordinary ale to Russia, and was advised to try and brew for the Indian market. He got a sample of the ale which a Mr. Hodgson was then selling

in India, and with the aid of one Job Goodhead, his maltster, soon succeeded in producing the type of pale bitter beer which, cooled by the aid of saltpetre, has become almost a necessity of the Englishman's life in all hot countries. It was brewed from the best pale malt and the very best hops, the latter in greater quantity than necessary for sweet ales. Rapid fermentation was also considered necessary, and when well made it requires no fining. Although bitter beer is now made at various other places, Burton is still the principal seat of the trade, and old Benjamin Wilson, the original brewer of Burton (for Burton was famed for its ale before the pale and bitter kind was invented), should see the transformation which has taken place in that district during the last half century. Unfortunately, beer may now be brewed from anything that can be made to ferment, and it may be bittered and flavoured with anything which can be made to serve as a "hop substitute." The term malt is no longer confined to malted barley, but is largely made from cargoes of damaged maize, rice, and other grains which have to be reduced into a fermentable condition by steeping with diluted vitriol at a high temperature, and cheap vitriol, imperfectly refined, often retains a poisonous amount of arsenic, which occurs in the Spanish pyrites, from which it is obtained. Gypsum, too, is a common ingredient, many tons of this being raised at the Stogumber quarries, in addition to that often contained in well waters.

Palm Kernels.—A technical name for the almonds or hard and stony inner part of the nuts of the oil-palm, *Elæis guineensis*. The kernel is enclosed in an outer mass of fibre and pulp, which contains the oil, and is covered with a rich red-brown skin or husk, a little thinner than that which covers the chestnut.

Palm-nut Kernel Oil, also known as Palm Kernel Oil, is a distinct substance from palm oil, and is the fixed oil extracted from the hard inner nut or white kernel of the seed, but not from the outer pulp, which latter yields palm oil. A single oil-palm tree yields from 20 to 60lbs. of kernels yearly, and these kernels are about the size and shape of dates, white inside, but surrounded by an orange red rind or skin.

Large quantities of this oil were, until lately, imported from Germany, but it is now mostly extracted in England from the imported nuts, by the solvent action of carbon bisulphate, the ground residue being afterwards used as cattle food.

Palm Oil.— Da. *Palmeolie;* F. *Huile de Palme;* Ger. *Palmöl;* It. *Olio di Palmi;* Port. *Oleo de Palma;* Sp. *Aceite de Palma;* Sw. *Palmolja.*

This oil is obtained from the mesocarp or fibrous outer coating of the fruit of the palm tree, of which there are several species flourishing in Africa, but the *Elæsis guineensis* is the chief. For miles along the West Coast between Cape Rianco and St. Paul di Loando there are vast forests of these oil palms, growing 60 to 80 feet high, much of the fruit lying unused and rotting upon the ground, while immense quantities of oil are exported from the various shipping stations, to which it is conveyed by the natives. In some districts where the trees are raised and cultivated, ripe nuts are first scattered over the ground, well raked, and are then lightly covered with earth. The young trees soon grow luxuriantly, a height of 10 to 12 feet in damp semi-marshy soil. They begin to bear at five years old and continue for at least 60 years. The supply of nuts fit for use is biennial, and the abundant supply of commercial oil is obtained from nuts gathered during the rainy season.

The nuts, which grow in clusters often weighing 1 cwt. each, are cut down in bunches and left exposed to the air for a week or ten days, in heaps. After this the nuts are collected and placed in a hole about four feet deep, which is lined with plantain leaves, and then covered up with more of these leaves and with palm leaves and earth. The nuts, after remaining thus to decompose for some three months or so, are put into a sort of trough made by digging a hole in the ground and paving it with rough

stones. Here they are crushed or pounded with wooden pestles until the pulp is quite removed from the surface of the hard inner nut. The whole is then removed from the trough, put in a heap, and the stones taken out, leaving the oily fibrous pulp, which is afterwards put into a pot with a small quantity of water, over a good fire, and well stirred until the oil begins to melt out. The pulp is then put into a rough net or bag, and by turning this in opposite directions from both ends the oil is squeezed out and oozes through the net. Other methods are employed to produce the oil for native consumption, but the above is the system usual in the production of the palm oil of commerce.

The oil while fresh is almost tasteless, of dark orange colour, and has an odour akin to violets. It is used as butter by the natives, and the unripe nuts are used in some parts of Africa for making soup.

In cooler regions, like England, palm oil assumes the consistency of butter, the finest quality being of the deepest shade; but exposure to the air turns it into a dirty white colour, and it becomes rancid and more or less nauseating; but occasionally a cask of palm oil arrives in Liverpool without having gone rancid, and if this could be done with certainty it would doubtless soon supersede margarine.

Palm oil melts at a temperature of 81° Fahr. at first, but after being kept some time its melting point rises to 90° or even 96°. It is of the non-drying class, and consists of about 69 parts of olein with 31 of stearin. Its specific gravity is 0.945, and this is a good test of its purity. Some samples contain water and other impurities often up to 15 or 20 per cent. If it be found to contain over 2 per cent. of water, etc., an allowance may be claimed. *Lagos* oil is said to be the purest. About 50,000 tons a year come into this country, and it has risen in value to about £26 per ton, but if by long keeping it has lost its deep red or dark yellow colour and has turned nearly white, it is of very little value.

The present supply of palm oil, however, is not a tithe of the amount procurable. Other immense palm forests exist near Cape Palmas, Elmina, and Fernando Po, in fact the tree grows wild in many parts of Asia, America, Cape Verd Islands, Jamaica, and Barbadoes, and a single tree will yield one to three gallons of palm oil annually, besides kernel oil. (See *Palm-nut Kernel Oil.*)

Palm oil is employed in the manufacture of soap, candles, etc., and as a lubricant for railway wagon wheels. In South Wales it is also used in the preparation of tin plates.

Palm Spirit.—See *Arrack.*

Palm Starch.— See *Sago.*

Palm Sugar. — This is a product from the juices or "toddy" of many kinds of palm in Ceylon, Bengal, and other parts of India, also in Siam and the Malay Peninsula, especially the *Phœnix Sylvestris* palm, whence it is called "Date Sugar."

Other species are the Palmyra palm, the cokernut palm, the Gomuti, Kittool, and *Nita fructicans.*

The trees grow 15 to 25 feet high, but are tapped when 2 to 6 feet high for the sake of their juice, which is collected in an earthen pot attached to each tree. This clear-white transparent juice or "*toddy*" is then boiled and skimmed, and evaporated over a fire down to a thick syrup. It is afterwards granulated, moulded, and dried in conical-shaped earthen vessels. This kind of sugar (made almost entirely by the natives) is very common throughout India and but very little is exported.

A variety of sago is obtained from the interior of the stem.

Palm Wax. — (See also *Chinese White Wax*). Obtained from the Brazilian Palm (*Copernicia Cerifera*) and the Andes palm (*Ceroxylon Andicola*).

In the former the wax is deposited in the form of a scale on the leaves, which is scraped off and melted into cakes, while in the latter it is found encrusting the trunk with a greyish coating, which can readily be removed by the fingernail. Both of these waxes are used for making candles.

Palm Wine, Tembo or Toddy.—Liquors prepared from the sap of the common date palm (*Phœnix dactylifera*), also from the white juice which exudes from the trunk of the cocoa or cokernut palm (*Cocos nucifera*).

In fact, there is quite a number of intoxicating beverages passing under the above names. One is obtained from the Palmyra palm of Ceylon and Southern India (*Borassus flabellifer*), another from the Kitool palm (*Caryota urens*), also an Indian species, and a liquor called Sagoür is made from *Arenga Saccharifera*, or sago-tree of the Malay Archipelago.

In these latter palms the vinous fluid is drawn from the young unexpanded spathe.

A similar intoxicating drink is procured from the stem of the tree, as in *Mauritia vinifera*, known as the wine palm of Para.

The stem of the Chilian honey palm (*Jubœa spectabilis*), when wounded, yields a thick honey-like substance often to the extent of 90 gallons of juice from a single tree, which is boiled to form the honey.

This tree has become well known of late in this country in consequence of the small hard, marble-like fruits having appeared in our shops under the name of "Little Coco nuts," and because of the kernel being edible and tasting like coker-nut; *Tembo* is the name in Zanzibar.

Logbi is a sort of wine made from the juice of the date-palm tree in Tripoli, North Africa, and is largely consumed there by all classes, religious prejudices not applying to it as an intoxicant. An incision is made near the top of the tree, and the sap allowed to flow into an earthenware jar which is attached, and changed twice a day. The flow varies, but continues nearly three months.

A good tree will produce *logbi* to the value of 2s. 6d. per day, but it will bear no fruit for next two or three years. When taken fresh from the tree it resembles milk, and has a sweet taste, but later on it turns sour. A spirit called *bokha*, resembling arrack, is also obtained from the date, and the stones of the dates are exported to Italy to adulterate coffee.

Palm wines are also made in most of the Polynesian Islands.

In the coral reefs of Funafuti, Ellice Islands, the coker-nut palms devoted to toddy production are readily distinguished by having step-notches cut in their trunks. Every month the palm puts forth a budding-spathe.

In toddy palms this is not permitted to develop into flower and fruit, but on its first appearance is lashed round with twine, "marled," in seafaring language, from the base to the apex. The peduncle of the spathe is scraped and slightly split, to allow it to bend more freely. Then the spathe is bent downwards gradually by tying down the tip for two or three days, the cord being shortened at intervals till the spathe has acquired the proper inclination. Three or four inches are cut off with a knife from the tip, to which a little spout or gutter of leaf is attached. This spout guides the drip of the sap into an empty coker-nut shell hung from the spathe.

Twice a day a lad ascends the tree, unbinds the tip, shaves a little off it with his knife to make the sap run freer, rebinds it, and exchanges the full shell for an empty one. Several spathes in one palm are open simultaneously.

In the Ellice Islands, we are told by Mr. Hedley, of the Australian Museum, Sydney, that cocoa-nut palms do not plant themselves, but the cultivation is confined to the very simple operation of merely placing a sprouting nut where it is to grow, and then clearing away the shrubs and vines from around it.

The work of collecting and husking the nuts devolves solely upon the men. For climbing the palms a stout rope-loop, "Kafunga," is twisted into a figure of 8; into this each foot is thrust as far as the instep. Placing his hands round the stem, the man leaps on to the trunk, resting his manacled feet on each side of it. Raising his hands to a higher grasp, he makes another leap, and thus ascends the tree by bounds of a couple of feet or so. Arrived at the summit, he plucks from his belt a short, notched stick and attached cord, "Kouteki." Applying the stick against

the palm stem, like a ship's crosstrees against her mast, he winds the rope half round the trunk, over the notch on the stick, back round the tree, and over the other notched end.

Repeating this twice or thrice the stick is securely hitched to the trunk, and the native standing upon the crosstrees may conveniently do his work. A nut is gathered by seizing the apex with the fingers, and twirling it round till the twisted stalk breaks, and the nut falls to the ground.

A leaning palm is used to collect rain-water, which, trickling down the stem, is turned by a wisp of leaves, and caught in a wooden trough.

Palmitin.—This is the solid portion of palm oil, purified into pearly white crystals, by first pressing out and then repeatedly treating it with hot alcohol and crystallising from ether. It is also produced artificially by the action of palmitic acid and glycerine at a high temperature.

Pamperolada, or Paperodada.—An Italian sauce made of bread, garlic, and water.

Pamplemousse.—See *Shaddocks*.

Pancakes.—F. *Crèpes, Pennequets;* G. *Pfannkuchen.*

These have an ancient and somewhat curious history. That marvellous compendium of learning and information, Dr. Cobham Brewer's "Dictionary of Phrase and Fable," explains that pancake is a pudding or cake made in a frying-pan. It was originally to be eaten after dinner, to stay the stomachs of those who went to be shriven. The Shrove Bell was called the Pancake Bell, and the day of shriving Pancake Tuesday.

The true pancake owes its special delicacy to its wafer-like thinness. It is made from one of the most delicate batters known to the cook, and requires the liberal use of eggs to keep it in form and rapid baking. Sift a pint of the best wheaten pastry flour and a large tablespoonful of powdered sugar into an earthen bowl. Add a pint of milk gradually, beating out all the lumps, and finally add three well-beaten eggs. Beat this batter vigorously, and fry in the centre of a frying pan, which has been lightly buttered, using three tablespoonfuls of the batter at a time to form a single cake.

Dredge powdered sugar over each pan cake as baked, and roll it up, slip it on a hot plate, and fry another. Each cake may be served with a spoonful of golden syrup, a tablespoonful of ale, or with the juice of a quarter of a lemon squeezed over it.

Aunt Sally's Pancake Flour is a self-raising flour of American origin. It is said to be composed of maize, wheat, rye, and oats, with ordinary baking powder, and is retailed in 2lb. packets.

Panyong Tea.—A Chinese variety of red-leaf congou, usually shipped from Foochow. Very useful in blending. It produces a thick, rich, sappy liquor of good flavour.

Papaws, or Paw Paws. — F. *Papayes.*

The oblong berries or fruit of a species of the South American papaw tree, *Carica papáya*, a very beautiful palm-like tree, very common in the East and West Indies, Ceylon, Mauritius, and Africa, and is also cultivated in Florida, where a species of it is well known as the *Bread Fruit* tree.

This is a rather remarkable tree, growing some 20 feet high, and branchless, but with a flat crown of long, seven-lobed, saponaceous, and mallow-like leaves, about 2 feet broad, on stems 2 feet in length. It is usual for the natives to hang, rub, or wrap tough fat meat with these leaves to render it tender. Tough meat is also readily made tender by washing it with water mixed with papaw juice; and if left in the water for 10 minutes the meat will even fall to pieces or divide into shreds during the process of cooking. The berries, of a rich yellow colour when ripe, are 9 or 10 inches long, ribbed outside with a thick fleshy rind, and of a sweet and rather agreeable taste.

This fruit is often eaten raw, but is also made into sauce or pickled, and

netimes boiled as a vegetable. There three or four other species of papaws, ich vary in size, colour, and flavour. ien eaten raw they are cut up in slices e musk melons, which, in fact, many them resemble in taste. A consider- le amount of attention in England was en to the properties of the plant in 78.

The acrid milky juice (Ciricin) of the ripe seeds is an excellent vermifuge. scratch on any part of the tree trunk sufficient to cause an instant flow of nilk," which quickly solidifies to a latinous mass, or if mixed with water said to make tender in about ten nutes the toughest meat soaked in it; en if old animals or birds be fed on e leaves and berries for a short time fore being killed, their flesh will be ind also quite tender. Papaws come this country pickled or preserved in ine, vinegar, or sugar, and are used dessert, or cooked in puddings, cakes, c. Price, 4d. to 6d. per lb.

Paper. — *Coloured Paper* — The louring matter is usually mixed with e pulp in the process of manufacture, sometimes the manufactured paper is pped into a bath of the tinctorial sub- ance, and then hung up to dry. For per to be coloured on one side only e pigments are ground up with gum- ater or size, or the stains thickened th a little of the same; the liquid lour is then applied with a brush to ie side of the paper, which is then spended on a line to dry.

The papers used by different trades ry considerably, but of "browns" the llowing are the most popular sizes and escriptions :—

rown (three pound)	16	by	20	in.
ouble Crown ...	20	,,	30	,,
emy	17½	,,	22	,,
ouble Demy ...	22	,,	35	,,
ent Cap	18	,,	21	,,
ag Cap	19½	,,	24	,,
laven Cap	21	,,	26	,,
oyal	20	,,	24	,,
ouble Royal ...	24	,,	38	,,
mperial Cap ...	22	,,	29	,,
ouble Imperial ...	29	,,	44	,,
lephant	23½	,,	29½	,,
Double Elephant ...	31	,,	46	In.
Casing	36	,,	46	,,
Two Pound	12	,,	17¼	,,
Three Pound ...	16	,,	20	,,
Four Pound ...	18	,,	24	,,
Six Pound Small ...	19	,,	24	,,
Six Pound Large ...	20	,,	25	,,
Eight Pound ...	23	,,	29	,,
Ten Pound ...	22	,,	34	,,
Hatters	22	,,	36	,,

Sugar papers are commonly made of following sizes :—

Double Two Pound	16	by	24	in.
Large ditto ...	17	,,	27	,,
Double Small Hand	19	,,	30	,,
Royal Hand ...	20	,,	25	,,
Lumber Hand ...	18	,,	23½	,,
Middle Hand ...	16	,,	22½	,,
Purple Copy Loaf	16½	,,	22½	,,
Ditto Double ditto	16½	,,	23	,,
Ditto Powder ditto	18½	,,	26	,,
Ditto Single ditto ...	22	,,	28	,,
Ditto Elephant ...	24	,,	29	,,
Purple Lump Loaf	23	,,	33	,,
Ditto Titler ...	29	,,	35	,,

Writing papers, letter and note papers, also have their special titles, forms, and sizes :—

Medium 4to ...	10¾	by	8⅜	in.
,, 8vo ...	8⅜	,,	5⅜	,,
Demy 4to	9⅜	,,	7⅜	,,
,, 8vo	7¼	,,	4¾	,,
,, 16mo ...	4⅝	,,	3⅝	,,
Large Post 4to ...	10	,,	8	,,
,, 8vo ...	8	,,	5	,,
Post 4to	9	,,	7⅜	,,
,, 8vo	7⅛	,,	4½	,,
Pinched Post 8vo	7	,,	4⅜	,,
Foolscap 4to ...	8	,,	6⅜	,,
Albert	6	,,	3⅞	,,
Queen's	5⅜	,,	3½	,,
Prince of Wales ...	4½	,,	3	,,
Foolscap broad folio	12¾	,,	8	,,
Foolscap long folio	16	,,	6⅜	,,
Pott	12½	,,	15	,,
Foolscap	13¼	,,	16½	,,
Pinched Foolscap	13	,,	16	,,
Post	15¼	,,	19	,,
Pinched Post ...	14½	,,	18½	,,
Large Post ...	16½	,,	20¾	,,
Demy	15¾	,,	20	,,
Medium	18	,,	22½	,,
Double Pott ...	15	,,	25	,,
Double Foolscap ...	16½	,,	26½	,,

Sheet, or Third Foolscap ... ... 13¼ ,, 22 In.
Sheet, or Half Foolscap ... ... 13¼ ,, 24¾ ,,

Twenty-four sheets equal 1 quire, 20 quires equal 1 ream, and 2 reams equal a bundle.

"FOOLSCAP PAPER" has a curious origin. It is said that this designation is derived from the fact that Charles I. granted to certain parties a monopoly of the manufacture of paper, and every sheet bore in water marks the Royal Arms. But the Parliament under Cromwell made jests of this in every conceivable manner, and ordered the Royal Arms to be removed and the fool's cap and bells to be substituted. Of course these were reversed after the Restoration, but the paper of the size of the Parliament journals always retained the name of foolscap.

For paper, apply to Job Day, Garden Street, Leeds, and 52 Fenchurch Street, London, E.C.; Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool; A. Norsworthy & Co., Nottingham, also confectioner's lining paper, etc. (See advt.)

Paper Bags. — *Tea bags* are made of various sizes and qualities, and quoted per cwt.

Paper bags for sugar are also sold by the cwt., and are done up in bundles of 14lbs. or 28lbs. each.

Flour bags:—	Inches.
Half pound or half pint	6¼ by 4¾
One pound or one pint...	7 ,, 6¼
Two pound or pint ...	9½ ,, 7¼
Four pound or half gal.	12¼ ,, 8¾
Six pound or quarter peck	14½ ,, 9½
Gallon or half peck ...	15½ ,, 10¾
Biscuit bags:—	
Quarter pound	7 ,, 6¼
Half pound	9½ ,, 7¼
One pound	11 ,, 8½
Two pound	14½ ,, 9½
Soda or fruit bags:—	
Half pound or half pint	5¾ ,, 4¾
One pound or one pint	7¾ ,, 5¼
Two pound or one quart	9½ ,, 6
Three pound	9½ ,, 7¼
Four pound	10½ ,, 7¾
Six pound	12½ ,, 8¾
Seven pound	13½ ,, 9

Apply to Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool; A. Norsworthy & Co., Nottingham, also confectioner's lining paper, etc. (See advt.

Paprika, or Hungarian Red Pepper. — (See also *Capsicums.*)— This is prepared from the fruit of the *Capsicum annuum*, var. *grossum*, a grown in Hungary, where it is held in high repute, and used very largely in cooking. Paprika is generally divided into four classes according to its strength, colour, and sweetness. The *Zzegediner* paprika is the sort most esteemed by *gourmets*. Paprika is devoid of pungency, and is now being used all over the world by bird fanciers for improving the brightness of the plumage in canaries. It is now one of Hungary's staple articles of export. It is also employed as a condiment, and placed on the table in a salt cellar.

Apply to the Hungarian Packing and Transport Company, Limited, Buda Pesth.

Paradise Nut Oil — The fruit of *Lecythis zabucajo* is sold under the name of "Noix de Paradis," to distinguish it from the Para or Brazil nuts furnished by *Bartholetia excelsa*. The kernel is edible, of excellent flavour, and when extracted by petroleum spirit yields about 50 per cent. of a liquid, limpid, colourless (or pale yellow) oil which is flavourless and inodorous, but readily turns rancid. The oil begins to become turbid at 12° C., and solidifies at 8° C.; it is soluble in ether, chloroform, and benzol, but insoluble in cold absolute alcohol, and only slightly soluble when warmed in this solvent. Though insoluble in cold acetic acid, it dissolves in its own volume of the same at boiling heat.

The following constants have been determined by De Negri:—Specific gravity at 15° C., 0·995; solidifying point, 4° C.; fusing point of fatty

acids, 37·6° C.; setting point of fatty acids, 28·5° C.; saponification value, 173·63; iodine number of the oil, 71·64—of the fatty acids, 72·33; acidity in terms of oleic acid, 3·19 per cent.; acetyl value, 44·08; refractometer index, 61·5.

Paraffin, or Tar-oil Stearin (sometimes spelt *Paraffine*).—A combustible solid material consisting of gas or fat; first discovered in the destructive distillation of wood lignite and turf about 1829 by Karl Reichenbach. It was once made from Irish *peat*, but did not pay. In this country it was first manufactured by Dr. James Young, who, in 1851, erected his works at Bathgate, where the above materials were exposed to a red heat in iron retorts, and the crude product refined by repeated distillations. It is now produced from several sources, but chiefly from bituminous shale, coal, and vegetable tar. The town and district around Broxburn, Linlithgow, in Scotland, depend almost entirely on the production of paraffin.

From 22 to 38 gallons of the crude product called *paraffin scales* are obtained from a ton of shale. It has neither taste nor smell, and is still extensively worked both in England and Scotland, as well as in the United States.

When pure it is not in the least dangerous, but if spirit be carelessly left in the oil, accidents may happen. Paraffin lamp accidents are estimated to cause about 300 deaths annually in London alone, 165 fires a year having been traced to them. (See p. 517.)

Paraffin Candles. — (See also *Candles*.)—These are a species of *mould candles*, and said to possess greater illuminating power than any other—58 per cent. greater than "composites," 40 per cent. greater than "wax," and 23 per cent. greater than ordinary spermaceti candles—hence they have superseded most other kinds. Owing to the fact that ordinary paraffin fat melts at a rather low temperature, candlemakers have to use a highly refined quality, or else mix it with stearine, to fit them for hot climates, hot rooms, etc.; and the generality of paraffin candles are now made of a material that melts at not less than 120° F.

Paraffin Matches.—See *Matches*.

Paraffin Oil or Kerosene. — A burning oil obtained in large quantities by refining paraffin. It was first manufactured as a lamp oil in 1850, by Dr. Young (see above), and its illuminating power is very high, 8½lbs. of thin paraffin oil giving a light equal to 40lbs. of the best tallow mould candles. It can be heated to 140° F. without fear of igniting the vapour, and gives an almost white light, clear and strong. For safety and economy it should be mixed with an equal quantity of strong alum water, or salt and water.

The heavier oil is often mixed with animal and vegetable oils, and used for lubricating purposes, soap and candle making, etc.

Paraffin oil used to sell at 3/6 and 3/9 per gallon, but (as a result of competition with petroleum) can now be produced of superior quality in Scotland at 3½d.

This oil has many uses. If liberally sprinkled over the haunts of ants, and repeated over and over again, it will destroy or drive the ants away. If a house be infested with these insects, it is pretty evident that there is an ant-hill near, and this must be destroyed before a riddance can be expected. Woodworms may also be got rid of by an application of paraffin and linseed oil.

Paraffin oil is also now being largely employed in compounding hair-washes.

Kerosene is an American name for paraffin oil.

Paraffin Scale. — A technical name for the crude paraffin wax deposited by cooling the oils holding it in solution.

Paraffin Soaps generally consist of ordinary soap, with a small proportion of paraffin oil or paraffin wax, or a

little of both, added. The advantage of paraffin in soap is, however, said to be largely imaginary—especially the wax, which is merely an inert body.

Paraffin Wax. — (See also *Ozokerit.*)—This is the refined and stiff material yielded by paraffin, petroleum, etc., with melting points varying from 80° to 130° F. It is a bluish white in colour, without taste or smell, found native in the solid state, and is also obtained from shale oil—the product of the destructive distillation at a very high temperature of bituminous shale. The hardest is used in making paraffin candles, while the softer wax, from 80° to 100°, is used instead of sulphur in making matches.

Apply to C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Paraffined Paper.—(See also *Wax Paper* and *Vegetable Parchment.*)—Largely employed in wrapping butter, bacon, and other greasy goods. Coffee, cocoa, jams, etc., are also frequently covered with it so as to avoid contamination with other substances.

The first one to use this kind of paper extensively was Mr. W. Hodgson, a Philadelphia pharmacist, in 1854. He got the idea from Mr. John Bell, the Oxford Street pharmacist, and first prepared the paper with beeswax. Paraffin next came in, and the manufacture was entered into by Mellor & Riltenhouse, of Philadelphia. The process consisted of impregnating with paraffin sheets of paper spread on heated surfaces, but in 1877 the manufacturers invented a machine, and it is now produced very rapidly and at trifling cost.

Apply to A. Norsworthy & Co., Nottingham, also confectioner's lining paper (see advt.).

Paraffinum Molle. — See *Petroleum Jelly.*

Paraguayan Coffee. — The Yungas coffee of Peru and Guatemala is as good as any produced on the American Continent. The grain is well developed, exquisite in aroma, green-yellow in colour, and in size and weight superior to Mocha, which, in general principles, it resembles. The plant develops rapidly, and produces in three years.

Paraguay Tea.—This is also known as *Jesuits' Tea, Gongonha, Maté, Yerba de Maté,* and *St. Bartholomew's Herb.*

It consists of the highly dried or roasted and ground leaves and stems of shrubs, such as *Ilex Paraguayensis,* Brazilian Holly, etc., which yield alkaloids similar to the *theine* of ordinary teas.

It is a species of holly, and some varieties will grow 15 or 20 feet high if allowed, with alternate leaves four or five inches long; but the finest tea is got from the smallest shrubs, which have numerous stems from one root. Three commercial grades are recognised—(1) the unexpanded bud, or shoot; (2) the full-grown leaf, separated from the twig, and with the mid-rib removed; (3) the dried leaves, or large old leaves, with pieces of twigs.

It derived the name "Jesuits' Tea" from the fact that "yerbales," or plantations of it, covering some 4,000 square miles in Paraguay, were once controlled and worked by the Jesuits. The right to gather the leaves is now usually sold by the proprietors.

Paraguay Tea is the term usually applied to the dried leaves, and *Maté* the name given to the beverage, probably because it used to be drunk out of *matés* (teapots made out of gourds, calabashes, etc.).

The plant is very common in Paraguay, North Corrientes, Chaco, and South Brazil.

In Paraguay entire trees are sometimes cut down, and the small branches and shoots are taken with the leaves and placed in the *tatacûa,* a small plot of earth, about 6 feet square, surrounded by a fire, where the material undergoes its first roasting. It is then taken to the *barbacua,* or grating, supported by a strong arch over a large fire, and undergoes a particular torrefaction, which develops the aroma. It is afterwards reduced to a coarse powder

PARAGUAY TEA—(continued).

in large mortars dug in the earth, then packed and well pressed in bullock hides, and dried in the sun. The packages, or *tercois*, weigh from 1 to 2 cwts. each, and are worth from 2/- to 4/- per lb.

These "teas," only introduced into England since 1883, have been largely used by Indians from the earliest times, and now by millions of people in Peru, Paraguay, Chili, Argentina, Uruguay, Brazil, and other parts of Central and South America, where they grow very abundantly, forming the woods called "yerbales." Maté seems to be increasing in demand, and its virtues are highly praised by the natives—who look upon it as a necessity, as well as a great luxury. They say it surpasses ordinary tea and coffee in that, while it is refreshing and invigorating, and favourable alike to mental and physical exertion, it does not disturb the nervous system.

There is another variety of Maté in Brazil grown about Curitiba, called *Gongonha* or *Congonha* (the *Ilex gongonha* and the *Ilex theezans*), and from these are prepared *Caasnini* and *Caanana;* the former is the best, and is exported in considerable quantities.

Paraguay tea contains about 2 per cent. of the *theine* which exists in our own ordinary teas, and has a similar aroma; but it also contains about 16 per cent. of an astringent acid resembling *tannin*, which causes the liquid, greenish at first, to turn almost inky black, and gives it a herby, bitter, and mucilaginous taste, as of holly, and not much cared for at first by most Europeans. It is also said by some to be far more intoxicative than Chinese tea—so much so, indeed, that it may even lead to *delirium tremens*, and those who abandon themselves to its excessive use are called "tea drunkards," so that opinions about it seem to differ very much.

The genuine Paraguay leaves, gathered every two or three years, yield a lighter-coloured beverage. In England they are often met with very much broken, and with bits of twig among them. Their appearance is not much unlike senna leaves; sometimes they are reduced to a coarse powder previous to infusion.

The stimulating bitter principle, the crystalline alkaloid (theine), or caffeine common to tea, is 1·8 to 2·9; coffee, 0·64 to 2·21; cocoa kola-nut, about 2·4; guarana, 4 to 5 per cent.; but each possesses other substances in solution, so that the action of each beverage is peculiar, and differs from that of the others. None are nutritive in the strict sense of the word, but all are adjuncts to nutrition.

Maté is usually served exceedingly hot, sweetened with a lump of burned sugar, and sucked through small tubes about eight inches long, with a bulb or pear-shaped strainer at the immersed end, to prevent the admittance of any dregs or small articles. A little lemon juice is occasionally added.

In the Argentine Republic alone the consumption is not less than 27 million pounds, or about 13lbs. per head, while the proportion of common tea is only 2lbs. per head, and of coffee ¼lb.

Maté Tea is everywhere popular with the creoles of Central America, who drink it at every meal, and chew the leaves all day long. It allays hunger, is mildly tonic, and keeps well. It removes fatigue—more so than either tea or coffee. Three successive infusions of almost equal strength may be made from the same leaves. The flavour of it is best developed when taken hot, but its restorative properties are the same, whether taken hot or cold.

Mr. Christy, in his "New Commercial Plants," commends it to the British working classes. These leaves must not be confounded with the so-called *Paraguay plant* once sold in packets as a substitute for tea, but which was said to be merely new meadow hay steeped in an infusion of catechu, then dried, cut

up very small, and strongly compressed. (See *Nervine Tea.*)

The principal centres of the maté industry are the Villa Real, a small town above Asuncion, on the Paraguay River; the Villa de San Xavier, between the Rivers Paraguay and Parana.

"Yerba de Maté" is the most valuable export from Asuncion. There are two classes sold, but it is only in the manner of preparation that they differ. The kind known as "Mborovire" has merely been dried over a furnace, and then beaten into small pieces with sticks. The "Molda," having passed through the same process, is afterwards ground in a mill to a coarse powder. The export is about 9,000 tons a year, and the export duty in 1895 amounted to £16,845. The "yerbales" were formerly the property of the State of Paraguay, but most of them have been sold, and are now in the hands of a few capitalists and companies. The average price at Villa Ascuncion is about 7/8 per *arroba* (25lbs.). In England, the article, being classed as a drug, is not liable to tea duty. It is now often recommended by prominent scientists for Europeans.

In Chili a similar tea is made from the leaves of the *Psoralea glandulosa*, and in Central America an infusion of the leaves of *Capraria bifolia* is drunk.

Paregoric.—W. *Meddalhaol* (also known as Paregoric Elixir, Asthmatic Elixir, or Tincture).

These are camphorated tinctures of opium, flavoured with aromatics, to mitigate pain in coughs, difficult breathing, etc., and can only be sold by registered chemists.

The Paregoric Elixir of the Pharmacopœia is a compound tincture of camphor, made from "opium in coarse powder, 40 grains; benzoic acid, 40 grains; camphor, 30 grains; oil of anise, ½ dr.; and proof spirit, 20 ozs. Macerate seven days, strain, wash the marc with spirit, and filter 20 ozs."

It is a very useful and popular cough medicine for old people. Adult dose from half to a teaspoonful, in cold water.

Scotch Paregoric is an ammoniated tincture of opium.

Paris Coal.—This is moulded charcoal made coherent with tar, and then re-charred. 100 kilos of charcoal dust are worked up with 33 to 40 litres of coal-tar, and the mass is moulded into the form of cylinders. These cylinders are then dried from 36 to 48 hours, and then charred in muffle furnaces.

Paris White.—(See also *Whiting*, *Spanish White*, etc.)—This is much the same as ordinary whiting, or *Spanish White*, only ground finer and more carefully dried.

Parisian Essence. — This gravy colouring is commonly made up of burnt sugar colouring or caramel, and flavoured with spices, but a very superior article is put up by Charles Cocks & Co., Reading, Berks.

Parmesan or **Lodian Cheese.**—This is probably the most widely celebrated kind of cheese made.

It is made in Parma and Piacenza, in Italy, but was first made in Lodi, and owes its name to a Duchess of Parma, wife of the grandson of Louis XV.

The best, however, is produced in Lodi, Milan, and Pavia, and it is said to owe its high flavour partly to the saffron introduced during manufacture and partly to the fine herbage of the meadows covering the Lombardy plains where the cows are pastured. It is entirely a skim milk cheese and free from fat, hence it is naturally hard, dry, and grainy; and in Italy the common name for them all is "Grana" cheese. In shape, they are round, have an average depth of 8 inches and a diameter of 2 feet, but the sizes vary from 44 to 132lbs.

The best is often kept three or four years to ripen, and none is marketed until at least six months old. If kept a very long time it becomes exceedingly hard, and needs to be grated before it can be used. Hence it is often powdered and sold in small bottles.

The manufacture is still carried on by rule of thumb, scientific principles being ignored, and the processes have been

handed down from the middle ages by generation to generation of professional cheesemakers, and not by ordinary farmers or their wives. Two different qualities are produced, which vary according to the season. That made from the 24th April to end of September is called "Maggenga," whilst that made from October to April 24th is termed "*invermenga*." In making the former, the milk has to be heated artifically, so as to hasten the separation of the cream ere it sours, whilst in the winter the milk will keep sweet till the cream rises of itself. The summer make is the richest.

A considerable degree of heat is used in its manufacture; the rennet is added at about 120°, and an hour afterwards the curdling milk is set on a slow fire until heated to about 150° F., during which the curd separates in small lumps, and a few pinches of saffron are then thrown in to colour and flavour it. About a fortnight after making, the outer crust is cut off, and the new surface varnished with linseed oil, and one side is coloured red.

The ordinary composition of Parmesan cheese is water 27·56, caseine and albumen 44·08, fat 15·95, milk-sugar 6·69, and ash 5·72.

One of the principal advantages in manufacturing these *Grana* is that the whole of the cream be available for the making of butter.

Milan is a great mart for Parmesan cheese and immense quantities are stored in the outskirts of that city.

As with other popular makes of cheese this kind is now extensively imitated in various parts of Europe and America.

Parsley.—F. *Persil;* G. *Petersilie;* Port *Salsa;* Sp. *Perejil;* W. *Perllys.*

There are several varieties of this hardy biennial (*Petroselinum sativum*): the curl-leaved, the plain-leaved, celery, and Hamburg.

It may easily be grown from the seed, sown in rows in February or March, at the rate of 1 oz. per row of 60 feet. When about 2 inches high, the plants should be thinned to 8 or 10 inches apart. Parsley seed is very poisonous to most birds, especially parrots, although to rabbits, hares, and sheep it is a luxury.

The light-coloured curled leaf kinds of parsley are generally preferred, particularly the dwarf, which has the best flavour. The varieties best known are *Champion Moss*, *Curled*, *Extra Triple Curled*, *Myatt's Garnishing*, *Turnip-rooted*, etc. The plain dark-leaved sort does not look so pretty as a garnish, and a fetid poisonous kind called *Fool's parsley* is liable to be mistaken for it. *Celery parsley* is generally used as a celery, while *Hamburg* or turnip-rooted *parsley* is grown for its larger white carrot-like roots, which are used in soups, stews, salads, etc., in same way as carrots, parsnips, etc.

Dog's or *Fool's parsley*, also known as *Small hemlock* (*Aethusa cynapium*), is only used in drugs.

Parsley leaves are often chewed to neutralise the strong scent of onions. When plentiful and cheap, parsley is frequently dried and bottled for winter use.

During dry weather gather fresh, crisp parsley, tie it in bunches, and throw into well-salted boiling water; boil quickly for four minutes, take up, and drain and dry at once before the fire. Then put away in dry, well-stoppered bottles. When wanted, it must be soaked for a few minutes in hot water. Fresh parsley can be kept for a considerable time in an air-tight tin; it will keep the colour much better than if kept in water.

Parsley Essence.—This is an extract of the volatile oil from which parsley derives its flavour.

Parsnips, or Parsneps.—Da. and Du. *Pastinak;* F. *Panais;* Ger. *Pastinaken;* It. *Pastinaca;* Port. *Cenoura branca;* Sp. *Chirvia.*

These are the roots of the plant *Pastinaca sativa*, a species of carrot-like biennial.

It has been cultivated in this country ever since Roman times. Its stem grows two or three feet high, with shiny pinnate leaves, and its light, buff-coloured, and sweet fleshy tap-roots are considered more nutritious than carrots or turnips,

though too sweet for some palates. They are usually sown in February and March, in drills about 18 inches apart, say, 1 oz. of seed per drill of 100 feet. When 2 or 3 inches high the young plants should be thinned out to 4 inches. They thrive best in deep, rich, sandy loam, and worst in clay or gravel. They do not grow in Scotland, and although native to England and Ireland, they are more extensively cultivated in France and the Channel Islands. Parsnips contain 81 per cent. of water, 3 per cent. of sugar, and 3·5 per cent. of starch.

Like potatoes, beets, and carrots, they keep best when fully grown, and when stored on dry earth or sand in a dark cellar. Parsnips are in season winter and spring, but are liable to be attacked by mildew. The greatest favourites are *Elcombe's Improved*, *Hollow Crowned*, *Large Jersey*, and *The Student*.

Parsnip-Chervil is the umbelliferous plant *chærophyllum bulbosum*, native of France. Its root is small, but considered very delicious when boiled.

For milk-cows parsnips are considered the best winter food. The best roots are those unforked and crisp; they are often boiled or fried and eaten with salt fish, especially by Roman Catholics in Lent.

Parsnip Wine is made in Ireland from the roots, and is said to approach *Malmsey* in quality. Other fermented liquors are made by mixing hops and yeast with the juice of the root.

Partridges, Tinned.—Du. *Patrys*; F. *Perdrix*; G. *Rebhuhn*; Ir. *Patrsg*; It. *Pernice*; Port. and Sp. *Perdices*; W. *Coriar*.

The partridge is an inhabitant of all the temperate countries of Europe, but is most numerous in the Ukraine. The Guernsey partridge has red legs. Large quantities are imported into England both in the feather and cooked in tins. Formerly, the red species was very scarce in Italy, but its place was supplied by the white, which was obtained at considerable expense from the Alps.

Partridges are perhaps the most esteemed of all game, and the most watchfully protected. Their food is mainly seeds, berries, and buds. When young, the legs are yellowish, and the bills dark coloured. When old, partridges are very tough.

This timorous bird was a favourite dish with the Greeks and Romans; the Greeks only ate the legs of the bird, and rejected the other portions, while the Romans only used the breast and legs.

Passeretta Wine. — A sparkling variety of first rank in Italy.

Passion-fruit.— See *Granadilla*.

Paste, or Pates.—See *Italian Paste*.

Paste, Adhesive. — A few recipes may be useful.

1. The commonest kind of paste is simply made by making a tablespoonful of flour into a smooth paste with cold water and stirring till quite free from lumps; then add boiling water till of proper consistence. The paste itself should not be boiled. This paste is best when it has turned somewhat sour, but not too far gone.

2. Another kind, suitable for mounting scraps in books, is made with rice-flour. This paste should be slightly boiled after mixing.

3. A paste used by naturalists is made of 3 parts of gum arabic, 2 of starch, and 1 of brown sugar.

4. A good strong paste, like "*Stickphast*," can be made as follows:—Dissolve a teaspoonful of alum in a quart of water; when cold, stir as much flour as will bring it to the consistency of cream. Carefully press out all the lumps. Stir in half-a-teaspoonful of powdered resin, and pour on to the paste a cup of boiling water, stirring it well. When it becomes thick, pour into a jar, cover, and keep in a close place. When required for use, take a little and soften with warm water. A little brown sugar added helps to keep it in a flexible condition. The alum keeps it from going bad so soon.

5. For artificial flower making, a paste is prepared with common starch and gum arabic, but this will not keep long.

6. For labelling machinery, drawers, painted work, etc., and to resist damp, a paste may be made from good rye flour and glue, to which linseed oil, varnish, and turpentine have been added in the proportion of ½ oz. of each to the lb.

7. Sago flour makes an excellent paste, and one that will keep well. It has been used by Chinese for many centuries, in covering tea chests and boxes.

8. *For sticking labels on tins:*—Add a little diluted sulphuric acid to ordinary paste, say, a tablespoonful to a gallon—just enough to make the paste taste acid.

9. Flour, 8 ozs.; sugar, 4 ozs. Make into a stiff paste with boiling water, and while hot add 2 drachms of powdered corrosive sublimate. (It should be labelled "poison.")

10. Shellac, 2 ozs.; borax, 1 oz.; water, 16 ozs. Boil together until shellac is dissolved. In all cases the surface of the tin or other metal should be freed from oil or slipperiness by rubbing with a piece of rag or tow moistened in a solution of antimony, or liq. potassae, and letting it dry on.

11. Add to ordinary paste a little honey or glycerine.

12. Add muriatic acid to the gum; this is apt to cause the metal to rust.

13. Add a little ammonia water, or

14. A little tartaric acid to the starch paste or mucilage.

15 Add aluminium sulphate (not alum).

16 Perhaps the best is to add 20 drops of a solution of chloride of antimony to 8 ozs. of paste or mucilage.

17 Mix in small quantity of water 10 ozs. mucilage of gum tragacanth, 10 ozs. of honey and 1 oz. of dry wheaten flour. Damp the labels, and then apply the paste. Dry off in a cool place. Another good plan is to roughen the surface of the tin with a piece of sandpaper before fixing the label on. To prevent tins from rusting through labels apply a coat of shellac or some other varnish to the tins before labelling, and use good gum mucilage to fasten the labels on. After all, we must admit that we have met with no mucilage or paste which *per se* will make labels permanently adhere to tin. The best plan is first to varnish the spot with a weak common resin varnish mixed with finely-sifted kaolin. After this dries, the label adheres perfectly. For varnishing, first size with solution of gelatine, and varnish with common resin varnish. A trifle of Canada balsam added to this prevents cracking.

18. *Damp-Proof Wall-Paper Paste.*—A paste which will adhere firmly to masonry or to wood may be obtained by boiling rye-flour with water in the usual manner and adding, after boiling, 8⅓ parts of good linseed oil varnish and 8⅓ parts of turpentine to every 500 parts of the paste.

Pasteurized Milk.—See *Sterilized Milk.*

Pastilles de Guimauve. — (Also known as *Pâtes de Guimauve.*)—These are French names for marsh-mallow drops, or cough lozenges, usually made of gum arabic, sugar, eggs, etc., with a decoction obtained from the roots of the marshmallow (*Malva Sylvestris* or *Althæa officinalis*), a very pretty light pink-flowered plant with velvet leaves, but often confounded with the common mallow, which has dark purple flowers.

The French are very fond of these lozenges, which, when properly prepared, are said to have considerable medicinal virtues in cases of cough, sore throat, dysentery, stone, etc.

"Pastille" is also a general name for any small aromatic lozenges, drops, and pellets, of sugar or gum confections.

Pastilles de Legumes.—These are savoury lozenges composed of burnt vegetables, herbs, etc., for colouring and flavouring soups, gravies, etc., and are usually sold in small tins, bottles, etc. Will keep good for years.

Pastina. — See *Strichetti.*

Pastry Varnish.—A preparation for cooks and confectioners; say, 2 ozs. of gelatine or best French Medal glue, dissolved in a quart of boiling water.

Patchouly.—F. *Patchouli.*

A popular Eastern perfume, prepared from the essential oil distilled from the dried twigs and leaves of an East Indian herb called *Pogostemon patchouli*, or *Nilam*, grown in Penang; also cultivated in Stiawan, Lower Perak, and a few other places. Price of the oil, 18/- to 28/- per lb.

The scent is akin to that of sandalwood, and very disagreeable to some persons, but very good for protecting

silks, clothes, papers, etc., from the attacks of moths and other insects. It is this perfume which characterises Indian shawls. The odour being very persistent and penetrating, ship and warehouse owners often object to receive it.

Pates and Pates (*Pastes and Pies*). —Pâte is the French word for paste, and is applied to macaroni, vermicelli, etc., as well as to things like liver.

Pâté is French for pie or baked paste, but is specially applied to a numerous and varied class of modern delicacies, such as the Pâtés de Chartres (Chartre's Pies), *Pâtés de Nogent-le-Rotrou*, *Pâtés de Pithiviers*, etc., all of which are made with game; *Pâtés de Rouen*, made of fowl and ham; *Pâtés d'Amiens*, of ducks; *Pâtés de Montreuil sur Mer*, of woodcocks; *Pâtés d'Abbeville*, of various kinds of fish, as the eel and sturgeon; *Pâtés de Strasbourg* and *Pâtés de Toulouse*, of fatty liver with truffles; while *Pâtés de Perigueux*, *Angoulème*, *Ruffec*, and *Nérac* are composed of either game or fowls, with truffles. Perhaps it would be more correct to say that the pies are *supposed* to have the above bases, but the lower class of manufacturers put in very little of game, and make up with cheap fats. The pastey crusts also have gradually been dispensed with, and replaced by earthenware jars, "terrines," and tin boxes, which, if not edible, are more reliable in preserving the contents.

Pate au Diable, or Devilled Potted Meat. — A strongly flavoured potted meat, made intensely hot with cayenne and other spices.

Pate d'Anchois. — See *Anchovy Paste*, also Osborn & Co.'s adv., page 7.

Pate de Foie de Canard. — A similar preparation to *Pâté de Foie d'Oie* or *Pâté de Foie Gras*, only from the livers of ducks instead of those of geese.

Pate de Foie Gras.— See *Foies Gras.*

Pates Alimentaries, Pates Alphabetiques.— See *Italian Paste.*

Patent Medicines.—F. *Spécialités*; Jap. *Myoyaku.* (See *Drugs.*)

A *patent medicine* is one which is sold under the protection of letters patent, but very few of the modern quack cures alls are really patented, and by far the greatest number are simply proprietary nostrums. A *Nostrum* is a medicine the composition of which is professed to be kept secret from the public, and a *Proprietary Nostrum* is one to which a proper name in the possessive case is added, as Brown's Pills. There are at present about 5,300 of these quack pills, potions, powders, plasters, tinctures, lozenges, extracts, syrups, and oils besetting John Bull and his family, and about 350 of them have specia plates appropriated to their sole use at the Inland Revenue Office, but scarcely one in a hundred of them has really been registered at the Patent Office, because to patent them would necessitate publishing the ingredients, and expose the quackery. It would show immediately to every educated person that in the vast majority of cases there is no originality or merit, or, in fact, any discovery at all. The publicity would burst the bubble, and nobody would buy it! Besides, of course, when the patent ran out, the enterprising proprietor would lose the benefit of all his high-flown and expensive advertising. The few recipes which have really been patented may be inspected at the Patent Office on payment of 1/- each, and a certified copy obtained for 1/- more, but in the whole history of the past we cannot recall any example of either a patent or a secret medicine which had aught but the most insignificant value. In our day there is really no such thing as a *secret* remedy in the true, or in any other than the trade, meaning of the word. Doctors know the composition of all of them, and their component parts are common property. These ready-made medicines are "secret" only to the gullible public to whom they are to be sold. Pain annihilators, blood purifiers, pink pills, little Carter's, Siegel syrups, vege

PATENT MEDICINES—(continued).

ble and animal extracts, botanical
)luses, invigorators, electric belts,
nulets, and chains, African electrical
lls and phials, green, blue, and yellow
ectricity, etc., have nothing *secret* in
em, but a large number are positively
rtful. When analysed, they are all
und to be very common-place in com-
)sition. The term "*Patent Medicine*"
, therefore, practically a sham,
ed erroneously, if not fraudulently.
he Patent Medicine Act first came into
rce in 1783, the Chancellor of the Ex-
equer dividing what he called "quack
edicines" into two classes—*i.e.*,
tent medicines and proprietary nos-
ums, and since then nine other amend-
g Acts have been passed.

The conditions which entail liability
stamp duty are:—"That the prepara-
)n is to be used or applied internally
externally as a medicine or medica-
ent for the prevention, cure, or relief
a disorder or complaint incident to or
any way affecting the human body"—
) "If the seller claims to have an oc-
lt secret or art for making or prepar-
g"; (2) "An exclusive right or title to
aking or preparing"; (3) "If it has
:en patented"; (4) "If it be, or has
:en, recommended to the public as a
)strum or proprietary medicine"; (5)
As a specific"; or (6) "As beneficial
r the prevention, cure, or relief of any
sease." These require a three-half-
nny stamp to be placed on the article
sold at a shilling or under, and so on
cording to price. Instead of this tax
scouraging the quacks or stemming
e sale of their rubbish, it appears to
ve had a contrary effect. The num-
r of stamped labels issued for these
edicines yearly is now about
,000,000, yielding some £250,000 to
e Exchequer. The annual licences to
ll are 5/- each; and altogether the Re-
nue derived from the business in Great
:itain during the year ending March
, 1897, no less than £254,726, the
ghest on record, and an increase of
15,780 over the previous twelve
onths. Possibly this increase is the result of grocers having taken up the sale, although since June, 1892, the Pharmaceutical Society has been prosecuting grocers and other unregistered or unqualified persons right and left for selling those which contain scheduled poisons, although druggists may still sell as many as they can. The number of licences issued during the year ending March 31, 1897, was 32,473, so that considerably less than half the holders of licences are registered chemists and druggists. The Government in 1885 very properly began to print across the stamp, "*This stamp implies no Government guarantee*," because it appeared that several of the quacks, in the endeavour to connect themselves with a semblance of public respectability, had begun to make people believe the stamp was a sort of warranty of efficacy, value, or safety, instead of merely a receipt for duty. The stamps are sold to anybody, just like postage stamps; so, of course, the Government officials know no more about what is in the bottles or pill-boxes than they know what is in the letters on which we stick postage stamps. Strange to say, anybody is at liberty to prescribe so long as he or she do not charge for doing so, and so we have the intelligent British public paying about three millions a year for quack remedies.

Doctors, and even chemists, have, of course, long been opposed to the "patent" business, for an ailing person, instead of going to the doctor, and paying his fee, is prone to dodge along with 1/1½ "patents," costing only 9d. or 10d. each. So the doctor misses the whole thing; and the chemist, instead of getting 2/- or 3/- profit for dispensing a prescription, can only get 1d. or 2d. profit on the "patent."

Thus, the whole enormous system of quack medicines and quack advertisements is conducted on the lines of implied and often positive disparagement of doctors, while druggists lend a great, if but a tacit, influence in the same direction by selling them. Sciolists masquerading as philosophers, smat-

PATENT MEDICINES—(continued).

terers too ignorant even to be aware of their ignorance, are constantly accustomed to deliver themselves in print of what they call their opinions on medical questions, and, apparently, no quack is too dense a blockhead or too gross a swindler to be petted and advertised by some fashionable lady or minister of religion.

The list of the panaceas is far too long to be enumerated here, but many of the most notorious are referred to under their respective titles. Did space permit, however, it would be highly interesting to quote the thousands of sham cure-alls—in the shape of pills, powders, draughts, tinctures, embrocations, electricities, etc.—that have been advertised, puffed, and paragraphed during the past century.

The herbalists formerly had a great run, but they seem to be losing ground now. It is remarkable that *booksellers* were among the first to deal in patent medicines, but they seem to have been gradually retiring from the business. Professional testimonial writers also have had good times, proving how whole families were just rescued at the *brink of the grave* when the entire faculty had given them up, and the undertakers actually whistling at the certainty of good business! It is obvious that when people are hard up they will write anything for the quacks who will pay them, but such pay is now at a very low ebb. "Genuine testimonials" from patients are considered more up-to-date, and these are very easily obtained; for, suppose 100 persons to be suffering to-day from toothache, and suppose they each take a spoonful of warm water, it is certain a lot of them will be well to-morrow! It is also probable they would also have recovered had they taken a spoonful of So-and-So's tincture, but the quack who provided the worthless tincture would have no difficulty in obtaining numerous "*genuine* testimonials," and thenceforward promulgating the imposture. Self-medication seems to have got a firm hold on the people. A man f often recommend his friend with a c fidence rarely found, except in allia with profound ignorance of the ma in hand, some pill or special form food or drink, or system of diet, so because the adviser happens to h found, or imagined, it useful to hims

There is no official examination, certificate, necessary for the quac The most ignorant pretenders may scribe and make up stuff, or have made up, from the most rubbishy gredients, whereas the drugs sold duly qualified chemists have to be u the standard of the *British Phar copœia*.

The constituents of many of the prietary specifics are ever varying, their strength and proportions; numerous cases of poisoning have b reported from the use of such prep tions as *Atkinson's Infant Preserva Steedman's Teething Syrup, H Specific for Whooping Cough, frey's Cordial, Balsam of Horehou Mrs. Winslow's Soothing Syrup,* etc.

The now notorious "Electric Bel of the Harness Company are a very g type of what can be done under sh of popular ignorance. Professor H ley, F.R.S., and many other renow scientific gentlemen of undoubted re tation, have well exposed these fra and clearly shown that such belts have no real electrical effect on body; yet, ludicrously enough, at trial several people went into court testify to the benefits they had rece from the belts, even when worn *over clothing*!

The United Kingdom is the European country which tolerates sale of quack medicines, except u very stringent restrictions. As cently pointed out by Mr. Jus O'Brien, in the Dublin Court Queen's Bench, "something more have to be done towards checking increasing sale of comparatively va less materials of mysterious virt

PATENT MEDICINES—(continued).

nistering to the infirmities, delusions, nities, and gullibilities of a large por- n of the population, and sometimes en to vicious and criminal tendencies, affording a large sphere for charla- ism and negligence."

The shameful extent to which blatant d lying advertisements disfigure the untry, and infest nearly every periodi- l that reaches our homes, has long en a crying evil, many of the religious pers and magazines seeming also quite lling to prostitute their pages in fur- erance of the quacks and their per- asions, quite regardless of the interests their readers. In fact, the religious pers have the most to answer for, be- use it is chiefly through their pages at quack pills and preparations are ade purchaseable. These religious nagers only expose their own world- ess when they argue that these adver- ements help the papers to pay their y, that literature, in its marvellously eap form, is a matter of paramount portance to the people, and that, as inconsiderable part of the expense at- ding its production is borne by the ack advertiser, the curtailment or ex- sion of such advertising would be a rious matter to be reckoned with. We depend upon advertisements, and, u know, we must live," say they; but e answer should be like that of Dr. hnson to the thief, "I don't see the cessity of it." If a religious paper n only live by misleading its readers to the hands of quacks to be robbed d poisoned, that paper were better ad.

Only registered chemists are allowed sell poisons and medicines which con- in scheduled poisons. Some of the der chemists were registered merely by tue of being in business before August 1868, but since this date no one has en, or can be, registered until he has ssed very severe examinations. Owing this and the Pharmaceutical Society's usade against the unrestricted sale of eparations containing poisons, the fol- lowing articles should not be sold by grocers without previously obtaining a guarantee from the manufacturers that they do not contain a scheduled poison:

Acme Weed Killer.
Adshead's Phosphor Paste for Rats.
Adshead's Vermin Killer.
Allen & Hanbury's Byno-Hypophosphites.
Annett's Cough Balsam.
Anodynol.
Arsenical Soaps.
Atkinson & Barker's Infant Preservative.
Backhouse's Pectoral Pills.
Barber's Vermin Killer.
Barclay's Bateman's Drops.
Barnes' Opium Poultices.
Barton's Exterminator.
Bateman's Pectoral Drops (Dicey's).
Battle's Bromidia.
Battle's Vermin Killer.
Battley's Liq. Opii. Sedativus.
Baxter's Lung Preserver.
Black Drop (Savory & Moore).
Blackburn's Currant Cough Elixir.
Bowker's Chiretta Balsam.
Bow's Liniment.
Bradley's Cherry Pectoral.
Brompton's Cough Specific.
Brown's (Dr.) Cough Bottle.
Brown's (Dr. J. Collis) Chlorodyne.
Buchan's Evenia Liniment.
Budden's Balsam of Horehound.
Carbolic Acid and its homologues (if containing 3 per cent. or upwards).
Chase's Beetle Poison.
Chlorodyne (all makers).
Chlorodyne Lozenges (all makers).
Cholagogine Tablets (Reed & Carnrick).
Clark's Neuralgic Tincture.
Clift's Vermin Killer.
Cooper's Sheep Dipping Powder.
Court's Drops.
Coy's "Speedy Notice to Quit."
Craven's Vermin Killer or Mice Powder.
Creosolene (Page's).
De Carle's Cough Elixir.
Dicey's "Squire's Grand Elixir."
Duncan, Flockhart, & Co.'s Easton Syrup Capsules.
Eaton's Fruit Cough Cure.
Edison's Polyform.

PATENT MEDICINES—(continued).
Fell's Tuna.
Fellows' Syrup of the Hypophosphites.
Fenning's Stomach Mixture or Fever Cure.
Ferris' Anodyne Amyl. Colloid.
Ferris' Glycerine and Codeia Jelly.
Ferris' Nepenthe.
Ferris' Syrup Chloral Hydrate.
Fletcher's Liq. Eastoni.
Fletcher's Syr. Hydrobrom. c. Strych.
Floyd's Vermin Killer.
Fly Papers.
Follet's Syrup of Chloral.
Freeman's Chlorodyne.
Gardner's Tamarind Elixir.
George's Pile Ointment.
Gibson's Vermin Killer.
Gomer's Balm.
Gostling's Rat Poison.
Gristock's Gout Pills.
Hammond's Rat Paste ("Remedy").
Hardy's (Brompton) Cough Specific.
Harrop's Syrup.
Harvey & Co.'s Aconite Cough Powders.
Hewlett's Mist. Tussi Rub. Conc.
Hewlett's Phosphorised Cod Liver Oil Emulsion.
Hewlett's Sol. Opii Purif.
Hogg's Rodentia.
Hunter's Solution of Chloral Hydrate.
Hunter's Vermin Killer.
James' (Dr.) Horse Blister.
James' Phosphor Paste.
Jelloid's No. 5 Pills.
Jeremie's Sedative.
Johnson & Johnson's Antiseptic Tablets.
Kay's Compound Essence of Linseed.
Kay's Lozenges, Chloro. Linseed.
Kepler's Cod Liver Oil.
Kingzett's Bactericide.
Kingzett's "L.G.B." Corrosive Sublimate Pellets.
Kreat-Halviva Embrocation.
Lambert's Asthmatic Balsam.
Lannatta Pills.
Lavan's Linctus.
Leath & Ross' Neuraline.
Leeming's Essence for Lameness in Horses.
Licoricine.
Lignum Antiscorbutic Drops.
Lignum Lotion.
Lignum Pills.
Lorimer's Syr. Hypophos. Co.
Mandall's Licoricine.
Mather's Fly Papers.
McCann's Diarrhœa and Cholera Mi ture.
McMunn's Elixir of Opium.
Mousette's Pills of Aconite, etc.
Norburn's Nerve Tincture.
Page's Vapo Creosolene.
Paregoric.
Parke, Davis, & Co.'s Normal Li Ergotæ.
Potts' Infant's Friend.
Radford's Mice Mixture.
Rankin's Head Ointment.
Richardson's Pectoral Balm.
Robert's (Dr.) Antiscorbutic Drops.
Robert's (Dr.) Specific Drops.
Robert's (Dr.) Restorative Drops.
Roths & Ringeison's Phosphor Paste.
Rough on Rats.
Sandford's Mice Poison.
Schacht's Liq. Bismuthi Sed.
Seabury & Johnson's Corrosive Sub mate Tablets.
Seller's Easton Syrup.
Sheep Dips.
Simpson's Morphine Solution.
Smith's Arsenic Pills.
Smith's Dog Pills.
Smith's Sedative Candy.
Smith's (W. F.) Fruit Lozenges.
Smith's Weed Killer.
Squire's Liq. Morph. Bimecon.
Stanton's Cough Pills.
Steiner's Cyanide Paste.
Steiner's Vermin Killer.
Stone's Muricidane.
Summer's Cough Lozenges.
Sutton & Co.'s Liquid Poison for Mice
Teasdale's Chlorodyne.
Towle's Chlorodyne.
Tromer's Malt Extract with Phos. Iron, Quin., and Strychnia.
Tuna (for Neuralgia).
Weed Killers.
Weston's Indian Miracle for Toothach etc.
Wilson's Mice Poison.
Winslow's Soothing Syrup.
Woodcock's Cough Pills.

Most, if not all, of the above contain poison, and can, therefore, only be sold by *Registered* chemists. A duly incorporated company can, however, stock them if it keeps a properly qualified man to sell them in the company's name, but it is illegal for an unqualified individual shopkeeper to manage the business in that way through a qualified man. Grocers stocking Patent Medicines require a 5/- yearly licence for every shop at which they intend selling. As already stated, they should also have a guarantee with the medicines purchased, that they do not contain "scheduled poisons," for, under no circumstances, must they sell them, nor even procure them "to oblige." The penalties are very heavy.

In 1897, a question having arisen as to the necessity of stamping simple drug preparations as patent medicines, Mr. W. Burgess, of Whitechapel, Liverpool, communicated with the Inland Revenue authorities in London, and had a reply pointing out that under the Act 52, George III., c. 150, there is a special exemption from stamp duty in favour of "all medicinal drugs whatsoever which shall be uttered or vended entire without any mixture or composition with any other drug or ingredient whatsoever." It would thus appear that a simple drug unmixed may be sold as a cure for headache, neuralgia, or other bodily ill under a special or fancy label without being liable to stamp duty.

Any packet of patent medicine, or box of pills, bearing the proper medicine stamp may be broken open and retailed in pennyworths at any shop having a patent medicine licence, providing that the pills, powders, etc., are simply wrapped in paper when handed to the purchaser, and not made into a "packet" by being secured with wax or string, or otherwise. Medicine stamps are not requisite for veterinary preparations unless they are also recommended for human ailments.

Wholesale Vendors.—Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool; T. Newbery & Sons, 27 and 28 Charterhouse Square, London, E.C.

Patna Rice. — This is a small-grained variety of rice, rather long and wiry, and remarkable for its whiteness. It is, perhaps, more generally esteemed in Europe than any other sort imported from the East Indies.

Paton's "Cleanall" Powder (in 6d., 1/-, and 2/6 tins).—A special and very economical preparation for use with cold water in washing and cleansing all kinds of wood and ironwork, painted or otherwise, and without injuring the surface. It is now regularly used in most of the leading steamships, hotels, and public institutions.

Sole Manufacturers.—Paton, Calvert, & Co., Leeds Street, Liverpool.

Patras Currants.—(See also *Currants.*)—A name for the currants shipped from the port of Patras, in Morea. Very large quantities are grown and cured in that region every year, especially in Pirgos and Olympia, and exported to England, Russia, and a few other countries. New crops ready for shipment about the middle of August.

Patras currants are larger, and freer from sand and gravel, than any others from the Ionian Islands, and, although Morea currants are preferred in most countries, in England those of Zante are most favoured.

They are shipped in casks of various sizes; but as the weight of the cask is included with that of the fruit, it is often stronger and heavier than necessary.

The annual currant crop—including that of Zante, Cephalonia, Santa Maura, Ithica, and the other Ionian Islands—generally exceeds 150,000 tons, or £2,000,000 in value, and about 10,000 tons are exported from Patras; but the vines in several districts have latterly suffered severely from the disease known as "*peronospora.*" About half of all the currants grown come to England.

Patum Paperium.—See Osborn & Co.'s advt., p. 4.

Paw-paws.— See *Papaws.*

Paxarete.— See *Sherry.*

Pea-berry Coffee. — A name given to the "virgin," "male," or singly grown berries, ordinarily found mixed in all varieties. As explained under "Coffee" ordinary coffee berries grow two in a pod, the flat sides facing each other, but some pods contain only *one* berry—usually of round shape, not unlike a date-stone; much of the Mocha growth is of that sort. These berries being of a superior quality and richness, are therefore often picked out from the flat-sided berries, and sold as "pea-berry."

Pea-fed Bacon. — A mere name for Canadian bacon, and not necessarily implying that the pig was fed on peas or pea-meal.

Pea-cheese.— See *Soy*.

Pea Flour.—(See also *Peas*, *Green Peas*, etc.).—In preparing this for culinary uses, some manufacturers submit the whole peas, and others the meal only, to a severe roasting and powdering process, which, properly done, has the effect of driving out of the peas those properties which are so apt to occasion flatulency. Pea flour thus treated becomes a very desirable and useful family food.

Pea-meat Tablets are used in Germany as a condensed food. They are made up of powdered and dried meat, incorporated with pea-meal, by strong pressure, and thus form in a small compass a highly valuable and nourishing food for soldiers, travellers, etc.

Pea-nuts.—The American name for the running variety of Earth or Ground Nuts (see pp. 340 and 443). Its vines are large, with spreading branches growing flat on the ground. The pods are large and white. There are several other varieties grown, some of them being upright bushes instead of vines. The American crop is three to four million bushels of 22lbs. In harvest, the vines, nuts, dirt, and all are fed into a machine or revolving cylinder to be separated and cleaned by friction. The dirt, leaves, and vines being thus removed, the nuts are fed out upon a revolving slat-table, the slats resting upon canvas from which negro women pick out those of the first grade which are known as "fancy." The selected nuts are fed from the table into chutes and then into bags. The remainder are run over a second slat table, fed into chutes and packed into bags labelled "extras." Four grades are sorted, the first three being sold to dealers and the fourth to confectioners for making "burnt almonds" and cheap candies. Africa and India send about 400 million pounds to Europe yearly, half going to Marseilles to be made into oil.

The Spanish crop averages some 150,000 bags of 110lbs. each. These are small round kernels, very fine and nearly all used by confectioners for burnt "almonds," etc.

Pea-nuts are now being cultivated with great success in British New Guinea. Suitable Government land is to be bought at 2s. 6d. per acre, and will yield 4 tons to the acre, while two crops are often raised in a year. Native labour is only about £3 per annum, cost of food and clothing being mere bagatelles, the latter only a bit of calico round the waist, and as to food, it is very simple and easily obtained in the country. A pound's worth of common tobacco will suffice to purchase native produce sufficient to feed fifty men for a month, but the planter needs an 8 or 10 ton lugger for getting about among the different Islands. The necessary houses are also quickly run up by the natives. Pea-nuts are now being recognised as a very desirable and wholesome food, specially for children, and the demand is everywhere increasing, especially in the United States, and would be more so in England were heed applied to driving off the oily content as is the case there. The production therefore promises a remarkable development.

Pea-nut Butter is manufactured in Indiana, and sold at 15 cents per lb. The shells are first removed by machinery, then the nuts are hand picked, roasted in a rotary oven, and ground into meal. The oil in the

ains gives the meal the appearance nd consistency of putty as it leaves e mill, except that it is of an orange lour. Water, and sometimes salt, is lded. It is put up in tins of various zes from 1 lb. up to 100 lbs., and aled. (See also *Arachis Oil*, p. 55.)

Pea-nut Meal Biscuits.—The fact at these nuts contain but little, if any, rbohydrates, has led to the use of ea-nut meal in making bread and bis-its, which are highly palatable, and seful to sufferers from diabetes and besity.

Peach Brandy.—A well-known and ppreciated spirit, obtained from eaches in the United States, especially Pennsylvania and Indiana. The lew Jersey make is, however, con-dered to be the best.

Peaches. — F. *Pêches;* G. *Pfirsiche;* It. *Persicas;* Port. *Pece-os;* Sp. *Melocotones;* W. *Afal wlanog.* (See also *Nectarines* and *Canned Fruits.*)

There are numberless varieties of eaches or *Persian Apples*, as they ere called in olden times; they re cultivated throughout Southern urope, Australia and America, but specially in France, California, China, nd Japan. They are not, however, xtensively grown in this country, where ey require ripening under glass. In rance, there are hundreds of gar-eners who grow nothing else, Mon-reuil being the chief centre, where they ipen about the end of July, and are ent all over Europe—Russia taking normous quantities—the finest peaches ometimes fetching as much as ten francs ach. And yet French peaches are far rom the best, indeed, most of them re so hard and tough as to require a harp knife to cut them, and it would robably go ill with the consumer eating nany in the raw state.

The common peach tree, *Amygdalus Persica*, grows about 20 feet high, and esembles the almond tree so closely hat it has been thought the trees are eally of the same species. The blos-oms are pink and appear on the trees efore the leaves.

The fresh leaves have the smell and taste of the bitter almond, and *peach-water* is distilled from them.

North America exports about 30 mil-lion tins of peaches every year, besides large quantities of the fresh fruit in wooden boxes, Georgia producing by far the major portion of the latter, but canning very little. California ranks next in quantity, those of Placer County are the earliest and largest, each fruit rarely weighing less than half-a-pound, and they are sent all over the United States and Canada while fresh. Michi-gan fruit, although of somewhat cada-verous appearance, has an excellent flavour.

Canadian Peaches. — Peaches are grown to a greater or lesser extent in British Columbia, Ontario and Nova Scotia, but the first-named province is too cold and wet ever to compete in commerce.

Leamington is centre of the Southern Ontario peach area; there are numerous orchards from 10 to 50 acres in extent, and the industry is showing remarkable development. In Nova Scotia only the warmer portions of the Annapolis and Cornwallis Valleys seem suitable, and at present planting is largely restricted to the section between Kemptville and Wolfville.

Peaches are commercially divided into two classes—"free-stones" and "cling-stones." The former, in which the flesh easily separates from the skin and stone, are the earliest and best for table use, while *cling-stones* are those in which the flesh adheres closely to both skin and stone, and, in fact, appears to be grown into the latter. The smooth-skinned and free-stone peach is thought to be identical with the nec-tarine.

The flavour of some varieties of the cling-stone peach is, however, said to equal if not excel that of the free-stone when fresh and properly ripened, but the cling-stone keeps longer in its fresh state than the free-stone, and being usually gathered before it is ripe, the lusciousness of the imported article is not at its best. The peach is easily identified by its velvety or downy fruit, almost round in form, and from 2 to

3 inches in diameter, with a suture or seam varying in breadth and depth in different varieties, and extending from the stem to the apex. When ripe, it is whitish or yellow in colour, beautifully flushed with red. It should always be peeled before being eaten.

American peaches are marketed in several forms: 1, As fresh fruit in crates or "boxes"; 2, as canned in syrup; 3, as pie-peaches, done up in 3-lb. and one gallon tins, with water instead of syrup, and intended for pies or ordinary fruit on the table, like canned apples; 4, large quantities grown further from the railway stations are dried or evaporated, for export at convenience; 5, some are made into peach brandy.

The *Buckhorn* peach, of San Bernardino county, Cal., is a free-stone of creamy white colour, with a bright blush, and is a very regular and prolific bearer.

Peach kernels, like almonds, contain a dangerous percentage of poison (prussic acid), and should be eaten very cautiously. Present value, about 35s. per cwt.

Peen-to peaches or *Flat peaches* are a fancy Chinese variety, and in which the fruit is so compressed that only the skin covers the end of the stone.

Preserved Peaches (Whole).—Gather the fruit without bruise or blemish just before it is ripe, and immerse each carefully half-a-dozen times in boiling thick syrup, letting them remain in each time for five minutes, and laying them on a sieve to drain each time they are taken out of the syrup. Finally place them in cold, thin sugary syrup, and cork down securely, dipping the top of the bottle in melted wax.

Green Peaches obtained in thinning the growing fruit, while young and tender enough for a needle to pass through the stone, are also preserved and crystallised, or used fresh in tarts or puddings.

Pearl Ashes.—(See also *Ashes*, p. 61).—The white pearly ashes, alkali, or incombustible residue, remaining from burnt leaves, sticks, wood, or sawdust. Pearl-ash is chemically known as the impure crystalline carbonate of potash.

In cutting down great forests for the sake of the timber in America, Russia, etc., the vast quantities of leaves, branches, and chips from the trees are collected and burned, and thus converted into American or Russian pearl-ash. Pearl-ashes were manufactured in Ireland in 1783, but the first recorded patent issued by the United States Government was on July 31st, 1790, to one Samuel Hopkins.

The goodness of pearl-ashes is distinguished by their strong body and a uniform *white* appearance, and their value decreases in proportion to the blue cast they have—the bluest being the most inferior sort of pearl-ashes. In preparation, the crude ashes are first soaked in water for a few hours and an alkaline solution is the result. This solution is evaporated down to a brown cake of dirty carbonate of potash, commercially termed *grey salts*. This is afterwards calcined to improve its colour, and it then becomes the pearl ash of commerce.

Pearl Barley, Scotch, French, etc.—Da. Bangebyg; Du. *Geperelde garst*; F. *Gruan d'orge, Orge Perlé*; Ger. *Gerstengraupen*; It. *Orzo Perlato*; Pol. *Krupy*; Port. *Cevada Montada*; Rus. *Krupa*; Sp. *Cebada Perlada*.

The pearl barley of commerce is usually made by steaming spring barley to soften the skin, then drying it a little, and afterwards grinding in a mill set wide, so as to round and polish the grains by a rasping or paring process, and so as to separate the whole of the husk, except that portion left in the furrow of the seed.

Scotch Barley, *Pot Barley*, *French Barley* (*Orge mondé*), *Hulled Barley* are all prepared by similar attrition to pearl barley, only not so perfectly, and without *rounding* the grains, and the barley used is usually the smaller grain known as "bigg" or winter barley.

Faro de Orzo is a like preparation made from sprat barley (*Hordeum zeocriton*), a species less frequently met with. (See also *Barley*.)

In preparing Barley Gruel, cooks should be reminded to first wash the barley and throw off the first water after it has boiled a few minutes. For

instance, boil three ounces of pearl barley in a pint of water for 10 minutes, then throw it off and put to it two quarts of boiling; when reduced to one-half it will be sufficiently boiled. Then strain, add sugar, lemon-peel, or wine to taste, and simmer for a few minutes.

Apply to Morris and Jones, 13 to 19 Sir Thomas Street, Liverpool.

Pearl Coffee.—A name for that coffee in which the berry instead of bearing two seeds has only one, which consequently takes a rounded form. A proportion of these is found in every crop. (Also known as *Pea-berry*.)

Pearl Cocoa.—(See also *Cocoas, Manufactured*.)—This is properly prepared from cocoa, sugar, and arrowroot, but it was the use of pearl sago that first gave the name to pearl cocoa.

Messrs. Fry & Sons, Bristol (the oldest cocoa and chocolate firm in this country), were the original inventors of it, and are still by far the largest manufacturers. Their pearl cocoa has been a household word for over half a century at least, and seems to consist of a large proportion of genuine cocoa, with sago and sugar of the best quality.

Cocoa nibs contain about 50 per cent. of oil or fat, which is a very valuable substance, but this is a much larger proportion than would be agreeable to most people, hence the above manner of dealing with cocoa is perhaps the most economical of all, for pearl cocoa of excellent quality may thus be sold at about one-fourth the price of *Essences, Extracts*, etc., and can be served at a moment's notice.

Dr. Bell, principal of Somerset House Laboratory, and many other authorities, speak very highly of such preparations, and protest against their being called adulterations. Some unscrupulous manufacturers, however, put so-called "pearl cocoas" on the market (often without either name or address) which can only be termed vile rubbish, three-parts of it composed of flour, spoilt by fire or water, potato starch, etc., and coloured brown with common ochre or other pernicious matter. The taste or flavour of cocoa may be sought in vain in such mixtures.

It is, of course, much the same with many other commodities nowadays, but the retailer who values his customers and his trade will be particularly careful whose "pearl cocoa" he sells. That of Messrs. Fry may, of course, be absolutely relied upon.

Pearl Soap.—Made of lard, and, when cold, beaten a little at a time, till it "pearls" or masses together.

Pears.— Da. *Pære*; Du. *Peer*; F. *Poires*; G. *Birnen*; It., Sp., and Port. *Peras*; Sw. *Peron*; W. *Peranen, Gerllyg*. (See also *Prickly Pears, Perry*, etc.)

The pear (*Pyrus communis*) is nearly related botanically to the apple. The flowers are of the type *rosaceæ*, to which family the pear also belongs and are pure white in colour, with purple anthers. The wood of the tree is reddish, very hard, close grained, and not liable to warp. It is often dyed black to imitate ebony, and is also used by joiners, turners, and engravers, as a substitute for boxwood. The pear-tree, of which there are about 3,000 varieties, is reputed to be a very long-lived tree, sometimes growing till 400 or 500 years old, and prefers a strong, dry soil. It is supposed to have been introduced into England from Gaul.

Pears are more zealously cultivated in France and Belgium than in England, and some of the finest are now grown in the Channel Islands. Probably the milder and warmer climate suits them better. Very large quantities of splendid quality are now imported in wood boxes every autumn.

The best French varieties are the *Doyenne du Cornice*, the *Beurré superfin*, the *Joséphine de Malines*, etc., while the most esteemed English growths are the *Pitmaston Duchesse, Jargonelle, William*, or *Bon Chrêtien, Louise-Bonne, Marie-Louise, Knight's Monarch*, etc. One of the best known and most useful culinary pears is the *Catillac*; these often weigh over a pound each, and when carefully plucked and properly kept, should remain in good condition till the spring. Other popular stewing pears are the *Uvedale, St. Germain*, and *Verulam*. Perhaps the

best dessert pear is the *Beurré Diel*. Of American growths, the *Bartlett*, the *Kieffer* and the *Seckel* are most in favour, and the latter, although small in size, is the sweetest of all pears, and of unsurpassed flavour. The finest flavoured *Bartletts* are grown in Central New York and Delaware, although the Californian growths are much larger and of finer texture. Bartletts are said to be the same and really descended from Williams' Bon Chrêtien, and seem to be highly adapted for canning, a process to which it lends itself excellently, by retaining much of its original flavour. It is, however, a fact that thousands of dozens of cans are filled with Kieffers every year, and labelled Bartletts. The Kieffer only came into notice since 1890. It is a hybrid of the *Pyrus communis* with the *Pyrus sinensis* or Japanese Sand pear, but although the flesh is firm it is only of inferior quality.

Another pear very popular in Florida, California, Madeira, etc., is the *Avocado*, or *Alligator pear* (see *Avocada*).

The chief use of the pear is for eating while raw, although some varieties are well adapted for baking and converting into jams or marmalades. Unripe pears are often stewed and preserved in brandy. On the Continent they are also dried in ovens, and used in cookery during winter. Large quantities are sliced and dried in America in same way as apples, and in France *Poires tapées*, are similarly dealt with.

From some hard, austere and unpalatable kinds Perry is made, and these, in fact, produce the best quality.

Clapp's Favourite is the largest early pear, ripening the middle of August. The *Sheldon* is not over handsome, but there is no better late autumn pear. *Belle Lucrative* bears good crops regularly; it is juicy and sweet, and of fair quality even before ripe. *Anjou* is a splendid winter pear, but the fruit is liable to blow off, during storms, before it is ripe.

In Spain pears abound all the year round, and various liquids are successfully prepared from them, notably pear vinegar, brandy, and a kind of perry.

As a rule, pears are best if picked when just mature, and ripened in the house; many varieties which are excellent when so ripened would be worthless if left to ripen on the tree. They should be luscious, juicy, and remain ripe for some time before going rotten or "sleepy."

Some varieties ripen early in autumn, and others not until the beginning of winter. The latter also require keeping an additional time to mellow, after removal from the tree, while other kinds spoil if kept more than a few days.

In storing pears it should be remembered that they acquire their best flavour if kept a little warmer and dryer than apples—the latter keeping longest and best in a cold and somewhat damp atmosphere, so long as they do not freeze.

Choice fruits should be laid singly on shelves without straw, hay, paper, or anything else between them and the wood.

They should never be stored near any other goods of strong smell, or they will be sure to acquire the flavour of the latter. The best packing is either dried moss, paper shavings, or wood-wool, the latter look neatest, but wood-wool is liable to speck the fruit.

From £150,000 to £500,000 worth, according to season, are imported into this country yearly.

Pear Oil, or **Essence of Jargonelle Pear.** — This is usually a spirituous solution of acetate of amyl oxide, the compound of vinegar with potato ether. This ether, when pure, has a peculiar fruity smell, but when mixed with six times its bulk of spirits of wine it acquires its name and its position in commerce as Pear oil.

It is quite an artificial compound from fusel oil, in which the fruit bears no part, but so effectively does it simulate the odour and flavour of the jargonelle pear, that it has become quite popular with confectioners' sugar-boilers, etc., and appears to answer every purpose.

Peas. — Da. *Aerter;* Du. *Erirten;* F. *Pois;* G. *Erbsen;* It. *Piselli;* Port. *Hervilhas;* Rus. *Goroch;* Sp. *Guisantes;* Sw. *Arter;* Pers. *Kirseneh;* Hind. *Wuttana;* W. *Pys.* (See also

PEAS—(continued).

Chick Peas, Green Peas, Pea-Meat Tablets, Petits Pois, etc.)

There are endless varieties of peas, and their cultivation is of prehistoric antiquity; but the two species most cultivated in England are the grey pea of the fields (*Pisum arvense*), grown for cattle, and the garden pea, *Pisum sativum*.

As to Garden or Edible Peas, the older round hard varieties of peas are practically out of date, except for very early purposes in fields; for in gardens the dwarf wrinkled first earlies now have the primary place. It is sometimes remarked that modern peas have less flavour than was found in the old marrows, such as "British Queen," "Ne plus ultra," etc.; but much depends whether flavour be confounded with sweetness, for some old marrows are regarded by many persons as far too sweet.

Of the numerous varieties of garden peas, those of the "*Marrow-fat*" class, tall growers, and of sweet taste, are the greatest favourites — especially when young and tender; when ripe and dried they are easily distinguished by their wrinkled appearance and green colour.

Blue Peas, dried and preserved for winter use, are now common luxuries; hundreds of thousands of bushels are now retailed during every winter and early spring. They are mainly judged by colour and boiling. They may be boiled quite soft, and retain their blue-green colour, and, being a good substitute for fresh green peas, the demand for them seems to increase every year.

Sugar Peas are a variety which have no lining in the pods, and are sliced and cooked in same way as kidney beans. The large *crooked* sugar pea is considered to be the best.

Split Peas (F. *Pois Cassés*).—In buying split peas by weight and selling by measure retailers should bear in mind that a quarter of splits bought at the ordinary weight of 504lbs. will only show a little over seven bushels if measured in a gallon vessel, and considerably less if measured in a bushel. Their market value depends largely on their boiling qualities.

Prices of Peas, Haricots, etc., compared.

Per Quarter (504 lbs).	Per Sack (252 lbs.).	Per ‡Bushel (63 lbs.).	Per Quart. (2 lbs.)	Per Cwt.	Per lb.
42/-	21/-	5/3	-/2	9/4	-/1
47/3	23/7½	5/10⅞	-/2¼	10/6	-/1¼
52/6	26/3	6/6⅜	-/2½	11/8	-/1¼
57/9	28/10½	7/2⅝	-/2¾	12/10	-/1⅜
63/-	31/6	7/10½	-/3	14/-	-/1½
68/3	34/1½	8/6⅝	-/3¼	15/2	-/1⅝
73/6	36/9	9/2¼	-/3½	16/4	-/1¾
78/9	39/4½	9/10⅛	-/3¾	17/6	-/1⅞
84/-	42/-	10/6	-/4	18/8	-/2
89/3	44/7½	11/1⅞	-/4¼	19/10	-/2⅛
94/6	47/3	11/9⅜	-/4½	21/-	-/2¼
99/9	49/10½	12/5⅝	-/4¾	22/2	-/2⅜
105/-	52/6	13/1⅞	-/5	23/4	-/2½
110/3	55/1½	13/9⅜	-/5¼	24/6	-/2⅝
115/6	57/9	14/5¼	-/5½	25/8	-/2¾
120/9	60/4½	15/1⅛	-/5¾	26/10	-/2⅞
126/-	63/-	15/9	-/6	28/-	-/3

It cannot be too widely known that all peas when putrid or even slightly decomposed are dangerously poisonous.

Yellow Peas are generally used as *split peas*, and are readily split by simply setting the mill stones rather wide apart so as not to grind them. They are mostly used for pea soup, and for ship-stores.

Before potatoes became common in England peas formed a principal food of the working classes, and from the large proportion of nitrogenous matter contained they are a highly nutritious food. They are largely used as human food both in the unripe state, as a green vegetable, and when ripe, as dried and split peas and pea-flour.

One pound of peas contains flesh-formers equal to 3½ ozs. of the dry nitrogenous matter of muscle or flesh. They contain no less than 22 per cent. of albuminoid casein.

Peas are usually sold in sacks of 504lbs., but kiln-dried bags of 100lbs. (bags free), pea-flour in sacks of 2 cwt.

Scotch Brose, once a very famous dish, and undoubtedly a most nourishing and strong food, is made in Scotland, from peas which have been kiln-dried, and then ground into meal.

Peas are now cultivated most extensively in Germany and in Canada, whence immense quantities are imported into this country in their dried state.

Pigeon Peas are a yellow species identified as *Cajunas indicus*, and native of the East Indies (see *Chick Peas*).

In England, Kent and Cambridgeshire are perhaps the leading counties in pea cultivation. The fresh green gatherings are made during June, July, and August, and much earlier when forced, but foreign growths—chiefly from Algiers, Bordeaux and Toulon, also from Africa—arrive from January to July.

Peas are liable, both when growing and when stored, to the attacks of a weevil (the pea-beetle), known as *Bruchus piel*, the grub of which—fat, clumsy, and wrinkled—feeds on the pea. The larvæ of this pea moth also spoil many peas. The eggs are not inserted in the pods, as is often supposed, but invariably glued to the outside, and it is only the newly-born larvæ that eat through the pod into the seed—the hole soon growing up if the pod be yet green.

Dried peas affected with these grubs should be subjected to the fumes of sulphur.

Apply to Hedley, Gamble and Crosfield, Circus Street, Liverpool.

Peat Moss, Dust or Litter, etc.—Da. *Törv;* Du. *Turf;* F. *Tourbe;* Ger. *Torf*, or *Mull;* It. and Sp. *Turba;* Port. *Terra Combustivel;* Rus. *Torph;* W. *Mawn.*

Peat occurs in many parts of England, Ireland, and Scotland, but more extensively in Holland, Belgium and Germany. Over 100,000 tons are imported every year principally from Holland. The best is of a light-brown colour, and when broken contains 8 to 10 bushels to the cwt. There are excellent peat deposits in the Midlands and North of England. The Yorkshire moors yield about 100,000 tons a year, but the heavy black product of Somerset is not so good.

Peats vary according to the difference of the plants from which they have been produced. Bog-peats consist chiefly of a species of *Sphagnum;* heath-peats, the roots and stems of *Erica* and *Calluna;* meadow-peat, from grasses and sedges; forest or wood-peats from the wood of trees; sea-peat, from seaweeds.

In the high lands peat is supposed to have been formed by the decay of vegetable life, chiefly that of moss and heather, on the surface of the ground, which forms a mould that increases year by year until it has undermined the health of the trees, and, having caused their fall, gradually covers them over with a yearly-increasing deposit. Ages afterwards the trunks are found several feet deep below the surface of the bed. The forests protected the growth of the moss, and were afterwards destroyed by it. In the lower beds peat is formed by the decay of aquatic plants under water, which fall to the bottom and form layer upon layer.

The value of peat moss when thoroughly dried has only lately been more fully recognised. Under the name of *Moss Litter* it has become very useful in stables, pig-styes, and other enclosures where animals or birds are confined, and has been found to be a very economical deodoriser and disinfectant.

Its use not only prevents offensive smells, but 1 cwt., costing 1/6 to 2/-, will absorb 7 cwt. animal matter, thus forming 8 cwts. of excellent manure, which may be sold for agricultural or horticultural purposes at 5/- per cwt.; indeed, ordinary peat dust is of itself a valuable manure, especially for heavy or clay soils, but those kinds containing iron pyrites and traces of arsenic are destructive to vegetation.

In the shape of *dust* it is specially adapted for preserving perishable articles, such as meat, fish, tomatoes, pears, apples, plums, and other fresh fruits. All that is necessary is to take a wooden case, arrange a layer of the dry peat dust at the bottom, then place each fruit carefully on the dust, taking care that the fruits do not touch each other; by repeating the layers of dust and fruit till the case is full and finishing off with a top layer of dust, storing in a dry, cool place, the fruit may be kept in perfect order for 3 to 12 months. The fruit will dry and shrink a little, but on being placed in warm water it readily swells out again to its former proportions. This dust is very cheap, easily procured, and may be used again and again. The

peat has no odour, nor conveys any taste to the fruit. It merely absorbs the moisture which the fruit contains, and at the same time hermetically protects it from the air. Even grapes packed in it will retain their fresh appearance for months. Cabbages, turnips, potatoes also, packed in peat, will not sprout in spring. Moreover, peat, being a bad conductor of heat, is therefore good for preserving ice. Peat moss is also being successfully utilised in making a patent fuel. (See "*Briquettes.*")

Another compressed peat fuel is made by the Canadian Peat Fuel Company, of Stratford, Ontario. The peat area is 40,000 acres, and from 1 to 20 feet thick. The material is cut and air-dried; it is then pulverised, passed through a picker to a hopper, which automatically feeds into a two-inch steel tube, 15 inches long. The pulverised peat is forced through this tube by pressure, and formed by dies into cylinders three inches long and almost as dense as anthracite coal. The fuel does not break up, and is weather-proof, owing to the glaze given it by frictional contact with the dies. It weighs 83lbs. per cubic foot, as compared with 73lbs. for bituminous coal, and 93lbs. for anthracite. It has been tested in locomotives, showing a thermal value of 100lbs. of peat equal to 93·15lbs. of coal. Tried in the power house of the Metropolitan Street Railway of Toronto, it was found that the heat produced was much greater than that of coal, but it was 8 per cent. deficient in lasting power. The cost of manufacture is stated to be 60 cents. per ton under the best conditions. In Ontario, hard wood for fuel is now worth 6 dols. to 8 dols. per cord; soft wood, 3 dols. to 5 dols.; and all coal costs 6 dols. per ton. It is estimated that there are 100,000 acres of peat bog in Ontario alone, principally in the counties of Perth, Welland, and Essex. Peat blocks, now sold everywhere, are much sweeter, healthier, and cheaper than coals.

Pebre.— An Italian sauce made of garlic and spice.

Pecan, or Peccan Nuts. — These are a very palatable fruit from the North American tree *Carya olivæformis*, of the hickory genus, and akin to the walnut. The trees often grow some 70 feet high, with a slender straight trunk, and compound leaves 12 or 18 inches long, each leaf having 13 or 15 slender pointed leaflets. The nuts, of which there are many sorts, sizes, and qualities, are usually olive or acorn-shaped, a little over an inch long, and covered with a light brown brittle shell, with internal partitions like the walnut. The kernel is often very rich and sweet, and has a very delicious flavour.

The pecan tree is cultivated very extensively in the Southern States, where it is also found wild, and yields two to four bushels yearly. It is easily grown, and will flourish in almost any kind of soil.

The thin or paper-shelled nuts are the best, although they turn rancid sooner, and are more liable to be damaged by worms, which bore into them. Some of the thicker-shelled kinds are very bitter, coarse, and inferior.

Texas grows about two-thirds of the crop, and has several mills for shelling and dressing the nuts for confectioners, etc.

Pecan nuts weigh 40 to 80 to the lb., and average 1,800 to 2,500 to the bushel. Price, about 15/- a bushel, and reach England mainly from New Orleans.

Pedro Jimenez Wine. —A Spanish product made from grapes which have been left on the ground to ripen. It is almost entirely used for sweetening and colouring other wines, especially sherry for the English market.

Pekmez. — A conserve of plums, largely prepared and exported from Servia.

Pekoe Teas. — F. *Peko pointes blanches.* (Chinese *pak-ho*, or *poco*— meaning "white hair, or down of tender leaves.")

These fine China teas are considered the highest quality of black teas in the market, particularly those from the South of China, which are really unequalled for aroma, but, being without much body, are only fitted for use as mixing teas. Pekoes are prepared from the first

pickings of the early spring leaves, and show the fine downy "tips" of the young buds.

Flowery Pekoes are produced from leaves so young as to be still covered with this down. They contain also a proportion of the flower of the plant and about 48 per cent. of soluble matter.

Scented or *Orange Pekoe* is usually prepared from the poorer qualities of ordinary Pekoe, and is distinguishable by its colour, a deep black mixed with yellow-orange. It only owes its delicious perfume and flavour to its being scented with the blossoms of an olive (*Olea fragrans*), or Chinese orange blossoms, the Cape jasmine, etc. Soluble matter only about 34 per cent.

There are several classes of Pekoes—broken Pekoe, Pekoe Souchong, etc.—Souchong being so called from the Chinese words *Siaou-chung*, meaning little plant or sort. It consists of large leaves of a blackish-brown colour, and is the product of the second gathering, and yields 46 per cent. of soluble matter.

Pekoes come in chests of 54lbs. and half-chests of 49lbs. each, while the Scented Orange Pekoes are in boxes of about 20lbs. each, but are rarely used alone.

Pe-la Wax. — See *Chinese White Wax*.

Pelotas, Coffee, or **Coffee Surrogate.** — A substitute for coffee, notorious a few years ago as made from acorns. It was made the means of some very wild speculation, the shares of the company running up to four times their value. The fraud was, however, soon discovered, and the company has long since gone into liquidation.

Pemmican. — Dried meat in powder. One lb. of it is said to be equal in nutritive power to 4lbs. of fresh beef. Beef dried and pounded with sugar or fruits and melted fat, is the most concentrated and portable form, for the use of Arctic voyagers. Large quantities are now prepared in Queensland. It is easily made and will keep good for a very long time.

Pemmican was originally made by the North American Indians from the lean parts of vension, dried by the sun or wind, then pounded into a paste and finally pressed tightly into cakes, with a few berries added for flavour. In South America an analagous article is called "*Tassajo*," and in South Africa "*Biltong*." (See pp. 95, 208, and 325, etc.)

Pennyroyal. — A variety of mint, *Mentha pulegium* (the "pulioll-royall" of the old herbalists), and has a similarly pleasant aromatic smell, with a warm pungent taste. It is used both as a flavourer and medicinally, especially for children, in flatulent colics.

PENNYROYAL.

Water, essence, and spirit of pennyroyal are all distilled from this fragrant herb, and *Pennyroyal tea* is considered an excellent expectorant.

Pepper. — Arab. *Fiffil Uswood;* Da. *Peber;* Du. *Peper;* F. *Poivre;* G. *Pfeffer;* Hind. *Gool-mirch;* It. *Pepe;* Mal. *Lada;* Pers. *Fiffil-i-Seeah;* Port. *Pimenta;* Rus. *Peres;* Sp. *Pimienta;* Sw. *Peppar;* W. *Pupyr.*

Pepper is a general term used for various hot, pungent, and aromatic pods, berries, fruits, or seeds, obtained from plants of the genus *Piper*.

All the pepperworts thrive best in the hottest parts of the world, and prefer low places, valleys, and banks of rivers.

In the Middle Ages all imported aromatic spices were designated "pepper," and in many cases used as money in the payment of tolls, etc., hence the custom of "peppercorn" rentals, *i.e.*, a nominal rental or perpetual lease.

The natural family of the Piperaceæ is limited to four, and *P. nigrum* is the only one utilised for ordinary dietetic and culinary purposes. The others, *Piper cubeba* (Cubeb pepper) and *Artanthe elongata*, are chiefly confined to medicines, while *C. fastigiatum* (cayenne or capsicums), "*Natal Pepper*," etc., although often called peppers, are really not from pepper plants at all. The nomenclature as to pepper is, in fact, often at fault, and very little is known of the chemistry of pepperworts. On distillation with water, however, they all yield a volatile and colourless oil, very similar to the oils of turpentine, lemon, and orange, but with taste and smell of pepper. Black and white peppers although different in commerce, are both produced from one and the same plant, and are just the same growth, only that the black corns result from immature growth, and the white from the fully ripe fruit. The outer skin or shell of the corn being removed by soaking the corns in water, and rubbing also decorticates the darker into the whiter article.

Want of space forbids any lengthy advertency here to the numerous commercial varieties, but more detailed information regarding the various peppers will be found under the following headings: — *Betel Pepper*, *Black Pepper*, *White Pepper*, *Long Pepper*, *Penang Pepper*, *Nepaul Pepper*, *Jamaica Pepper*, *Capsicums* and *Chillies*, *Cardamoms* or *Elatchee*, *Shot Pepper*, *Coralline*, *Cubebs*, or *Bennin Pepper*, *Grains of Paradise* (*Guinea Grains*), *Amomi* or *Malagueta Pepper*, *Pimento* or *Allspice*, *Kava*, or *Yava Pepper*.

They are all stimulants of digestion, but in large doses are apt to provoke internal inflammation.

Heavy pepper corns are generally preferred by dealers, although analysts have shown that the lighter really contain more of the active principles. In Spain and Portugal there is a large variety of capsicum, or sweet red pepper, known as "Pimientos Morrones." They have the shape of immense strawberries, colour of tomatoes, and are very meaty, also free from the peppery hotness of other capsicums. Peppers have for centuries been subjected to persistent adulteration, and many of these are noted elsewhere. It is doubtful whether any other product has been such a favourite with ingenious sophisticators for the exercise of their talents. Even the whole corns from the Straits Settlements are often counterfeited with pellets of clay. There are unscrupulous individuals in every business who have no reputation to lose and who aim at profits more than honesty; still, a great deal of nonsense has been written on the impurities of pepper, and those interested may find some amusing information in *Cooley's Cyclopædia*.

Wm. Gardner & Sons, engineers, Gloucester, make machines specially suitable for treating above. Catalogues free.

Special Firms.—Hedley, Gamble, & Crosfield (Grinders), Circus Street, Liverpool; Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool.

Pepper Pot.— A mucilaginous soup or stew of pork, fowl, onions, shalots, red chillies, and cassareep, all cooked in a "buck-pot"—an earthenware vessel made of a peculiar kind of clay by the Indians. Pepper Pot is a very popular mess in the West Indies.

Pepper Shells.— Pepper shells and their attending dust, etc., are the so-called "refuse" arising from the turning of the natural black pepper berry into white pepper, and this is effected by various methods, such as soaking, liming, and by decorticating it by machinery, both in the Eastern markets of production, and after shipment thence. (See *White Pepper*.)

Peppermint Cordial (also known as Crême de Menthe). — This is ordinarily a mixture of gin strongly flavoured with essential oil of peppermint and oil of citron. It is also heavily sweetened with sugar, and sometimes coloured with saffron and indigo.

Recipe.—½ oz. of Peppermint Oil, ½ gill of spirits of wine, and 4lbs. lump sugar. Kill the oil by mixing it with the spirits of wine; dissolve the sugar in 1 gallon of water, let it simmer over the fire, and when cool add the above ingredients and stir well. Finally, add four gallons of unflavoured spirits and fine down with a little alum.

It is only a common liqueur, but much favoured by the lower classes in London. Peppermint in various forms is, however, a powerfully diffusible stimulant, antispasmodic, and stomachic, also very good for flatulency.

Peppermint Essence.— A mixture of the essential oil of peppermint and spirits. The strength varies as prepared by different firms, some mixing 1 part of essential oil with only 3 of rectified spirit, others 1 of the former and 7 to 10 of the latter; another is made with 1 oz. each oil of peppermint and rectified spirit, ½ oz. carbonate of magnesia, and 7½ ozs. of water. In the latter case the oil and magnesia are first well mixed, poured into the filter, then the spirit is added, and lastly the water. It is occasionally coloured with the leaves of the plant, or spinach, etc.

Peppermint Lozenges.—F. *Pastilles de Menthe.* (See also *Lozenges and Drops.*)

The best are made from double refined sugar and English oil of peppermint, say 1 fluid drachm of the latter to 1 pound of the former, with the mucilage of acacia gum, to make them cohere.

The common kinds are made of cheaper sugar, foreign peppermint oil, and with 10 to 30 per cent. of raw potato starch; and even plaster of Paris and chalk, with a little blue to improve the colour, have been found in low-priced kinds, but such sophistications are liable under the Food and Drugs Act. The potato starch does not thus get cooked, and, as the globules remain unchanged, such lozenges are injurious as tending to induce or aggravate fermentative dyspepsia. It has, however, never been decided whether peppermint lozenges are legally a *drug* or an article of food; but, having a definite composition of sugar, albumen, and oil of peppermint, etc., if any mineral substances are added, it is illegal.

The purity of lozenges may easily be tested by leaving one to dissolve in a tumbler of cold water. Sugar dissolves readily, and gum, too, but flour, starch, etc., will settle to the bottom.

Peppermint lozenges are sold more than any other kind, and are good for nausea and griping pains, also for hiding bad breath. They are made in several sizes, thick and thin. *Threepenny mints* are supposed to be the size of a threepenny bit, and about as thick as two halfpennies; *Fourpenny mints*, size of a fourpenny bit; *Sixpenny thick mints* are size of a sixpence, and about as thick as three bronze pence; *Shilling mints* are also made thick and thin, but the sixpenny sizes are most popular.

Peppermint Oil. — F. *Huile de Piperment.*

A valuable essential oil obtained from the peppermint plant, *Mentha piperita*, by distillation with water. This plant is very similar to the English garden mint (see *Spear Mint*), but has stalked leaves and the flowers in shorter spikes; it has also much greater pungency of odour and taste, and is considered superior to and more valuable than spear mint. Japan oil is obtained from the glabrata or piperascens varieties of *Mentha arvensis*, and this is the source of most of the menthol used; also really identical with the wild mint to be found in our fields and waste places.

The *Piperita* plant is native to Europe; it has been highly cultivated in the district of Mitcham for about 150 years, and during the last 30 years at Market Deeping. It is also grown at Hitchin, Steppingley, and Cambridgeshire. With the view of preserving the purity of the growth, all other kinds of mints are by some growers carefully extirpated from the neighbourhood of the grounds. Some varieties are also grown around Azim, in France, and Saxony, in Germany; but most extensively in the

PEPPERMINT OIL.—(continued).

United States, particularly in what is known as "the peppermint belt" of Wayne County, New York, Ohio; and St. Joseph County, Michigan, where the chief distilleries are operated.

There are no large farms entirely devoted to this plant, but it is cultivated in small quantities by many persons; and there is hardly any crop which fluctuates so much in the quantity produced on a stated area as this, its success depending chiefly on climatic influences.

PEPPERMINT.

An acre will grow plants enough to yield 8 to 16 lbs. of oil, according to condition and age, 5 or 10 lbs. of the herb yielding one ounce, and it is for producing this peppermint oil that the herb is chiefly raised.

In 1896 the American oil crop was about 250,000lbs., of which 142,835lbs. were exported. In England the oil is distilled from the fresh cut plant, but in America the plants are first partially dried.

The consumption of the world exceeds 100,000lbs. of this oil annually. Its peculiar and powerful odour, similar to that of the plant, is due to the menthol, or peppermint camphor, which it contains. When new, it is of a pale yellow or greenish-yellow colour, but becomes gradually thicker and reddish with age. It boils at 365° F. As sold, it usually contains about one-third of rectified spirit, and is often adulterated with the oils of rosemary, spear mint, turpentine, pennyroyal, sassafras, or camphor, and sometimes it is deprived of part of its menthol by a skimming process. Two varieties of the plant are grown at Mitcham, known as *black* and *white* peppermint, but mostly the former, which has purplish, hairy stems and deep green leaves, darkest on the upper side, and small purple flowers. The *white* variety has stems and leaves of lighter green and greyish flowers. A ton of the fresh black herb yields about 8lbs. of oil, while a ton of *white* rarely yields more than 6lbs. The oil of *white* peppermint is, however, the best, and is mostly used in high-class confectionery and by chemists. The market value of peppermint oil depends on the amount of menthol it contains. Chinese and Japanese oil, when pure, contain about 85 per cent. of menthol, and English 60 to 70, but American only 46 to 48. That of H. G. Hotchkiss, "the peppermint king," differs from most others by turning thick when first mixed with spirits of wine, but after a short time becomes clear again.

Mitcham oil fetches about 30/- per lb.; American, 10/-; and Japan, 4/- or 5/- only. The "English distilled" is the only kind recognised by the British Pharmacopœia for pharmaceutical purposes. The use of peppermint as a "medicine" dates back to the Middle Ages.

Besides being used in medicine, cordials, sweetmeats, and perfumery, oil of peppermint is often employed by sanitary engineers for testing joints and traps, a few drops poured into a washbowl or closet readily making its presence sensible to the smell at any imperfect joints in a pipe leading therefrom.

It does not spoil by keeping, but rather improves, so may often be advantageously bought when market is low, and stored for use or re-sale.

Pepsin and Peptonised Food.—Pepsin is a light yellowish-brown powder, having a faint but not disagreeable odour, and a slightly saline taste. It consists of the dried residue of the mucous lining of the fresh and healthy stomach of the calf, sheep, or pig. The stomach of the recently killed animal is first washed with cold water, and a viscid pulp is obtained by scraping with a blunt knife or other instrument, which pulp is at once spread over a glazed surface, and quickly dried at a temperature of about 95° F.

It is finally reduced to powder and bottled, but is also sold in tabloids and in liquid form; the latter being prepared by Witte's method (glycerine extraction and subsequent filtrations) is best known as the acid glycerine of pepsin. Pepsin, being the active principle of gastric juice, generated during the digestive process, retains its activity only in the presence of an acid, hence the addition of a little dilute hydrochloric acid frequently aids the action of pepsin to predigest proteid foods.

It has the property of dissolving the food and preparing it for digestion. It is imported combined with wine, spirits, glycerine, lime juice, or lactic acid, and also in the form of sugar-coated tablets. Pepsin acting upon albuminoids, and not upon fats nor upon farinaceous foods, is only used at or just after meals at which animal food is taken by aged persons or those with weak digestive powers. It is also inactive in alkaline solutions, such as lime water, soda, bicarbonate, ammonium preparations, and soluble salts of bismuth.

Peptonised Foods or Peptones are a combination of pepsin and other matter, such as albumen, gelatine, or cartilaginous food, so it is easy to pre-digest foods like milk, gruel, beef tea, soups, jellies, and blanc mange for delicate children and persons of weak or defective digestive organs; but, of course, robust and healthy people prefer to do their own digesting.

The foods are prepared both from powdered and liquid pepsin, the latter being sometimes made by macerating the stomach sweetbread of the pig in dilute spirit.

In fact, Peptones may be prepared in several ways:—

(1) By the action of steam on minced flesh.

(2) By digesting the flesh with pepsin and tartaric acid.

(3) By the action of hydrochloric acid.

The last is considered the best, as it contains 60 to 70 per cent. of true peptone. The second contains only 35 per cent., while the first contains chiefly syntonin, which may stimulate digestion, but is not in a condition to be assimilated.

The following has been published as the composition of *Lactopeptin*:—Milk sugar, 80 parts; pepsin scales, 16; pancreatin, 12; diastase, 1; lactic acid, 10; hydrochloric acid, 10. Mix and dry.

Peptonised foods do not keep long without further change; they are soon destroyed or exhausted by high temperatures and acids, and it is, therefore, better not to peptonise more at one time than is required for about 12 hours' use.

Perch.—This well-known fish (*Perca fluviatilis*) lives in the still and quiet parts of rivers, lakes, and large ponds. It is remarkable for its beauty, the sharpness of the spines of the first dorsal fin. Many incautious young fishermen have had cause to remember this, and even the ferocious pike will avoid it. It feeds on small fish, minnows, and frogs, and is easily caught by the angler in warm weather, when it bites at any bait. The perch is also noted for the time it will live out of water.

In some parts, where fresh fish are much in request, live perch are often carried some distance to market in baskets of wet moss; and, if not sold, are taken back, replaced in the pond, and reserved for another occasion. The average size is under a pound, but they have been found 3 and 4 lbs., or more.

Perfumery.—The modern methods by which perfumes are extracted are by:

PERFUMERY—(continued).

1. *Expression*, as in the case of fruit skins rich in essential oils, such as orange and citron peel.

2. *Distillation*, performed by heating flowers with water in a boiler, and condensing the vapours produced, as is customary in obtaining the oils of neroli, rose, patchouli, geranium, lavender, caraway, etc.

3. *Maceration*, *Absorption*, or *Enfleurage* in animal fats or mineral oils, with the application of heat for some hours, as employed in dealing with such flowers as the mignonette, orange flower, jasmine, tuberose, and violet, which really contain no essence.

The principal medium for securing the perfumes of these flowers is a large lump of pure lard; but the carbohydrates, such as beef and mutton fat, highly purified, possess a power of absorption almost unequalled. When, therefore, violets are in season, the owner of a flower garden prepares thousands of square wooden frames, the rims of which are three inches in depth. In the centre of the frame is a sheet of glass, and the whole series of frames is so constructed that one fits upon the other. Upon both sides of the glass a film of highly purified lard is spread, a quarter of an inch in thickness, and upon this lard the freshly-plucked violet flowers are lightly laid. Thus the contrivance offers a succession of layers of blossoms and of fat, resting upon the lower, but not touching the upper layer. In a short time the whole perfume of the violets will have been absorbed by the fat; and this process is repeated every 12, 18, or 24 hours, for perhaps 30 times, by some gardeners. Thus captured, the perfume may travel over the sea to be transmuted into other forms.

In order to free the fat from its perfume, it is cut into small cubes and macerated in pure spirits of wine. It is then obtained as an extract. Definite proportions of essences must be mixed so as to produce bouquets of odours. The pure perfume scarcely ever reaches us, as it is not the business of the manufacturer to provide the public with the primary odours; he translates these latter into other combinations.

There seems to be a sort of analogy between scents and musical notes, and when the scents are grouped together in a similar way that notes form a chord, they form what is commonly known as a *bouquet*, providing they are united so that no one odour predominates over another.

The principal seat of the cultivation of perfume-yielding plants is round about Cannes, Grasse, and Nice, in the South of France. In fact, the districts of Grasse, Cannes, and Gulf Juan constitute one immense flower garden, 25,000 hectares in extent. Violets are ready by January 15th, then come jonquils in February, orange flowers and roses in April, mignonette in May, jasmine and tuberoses in July, cassia in October.

Some idea may be formed of the extent to which this enterprise is carried when it is stated that 1,600,000lbs. of orange flowers, 500,000lbs. of rose blooms, 100,000lbs. of jasmine blooms, 30,000lbs. of tuberose flowers, and 5,000lbs. of jonquil flowers are consumed annually.

It is a matter of regret that so few flowers are cultivated for their odour, while so many are grown for the aspect they present. (See *Flowers*, *Nosegays*, etc., p. 378.) There is no doubt that pleasant perfumes exercise a cheering influence on the mind, easily becoming indelibly associated with remembrances. Lily of the valley, honeysuckle, clove-pink, and wallflower all yield delicious fragrance. Those odours sold at the perfumers' are made from combinations of other flowers. The *Extrait de violette* is entirely minus the violet; the jonquil is absent from the jonquil; the *Rose de Bengale* is devoid of the rose, and the so-called heliotrope is without the heliotrope; violet, indeed, is generally iris.

To make an extract fit for the handkerchief, it is necessary to cut the perfumed fat into small pieces, to drop them into a wide-mouthed bottle, and cover with rectified spirit, and allow

PERFUMERY—(continued).

them to macerate for a week. When strained off the process is completed.

By distillation a perfumer can show you otto of roses from the Far East of a richness of fragrance utterly inconceivable to those who have never smelt the Oriental rose. Some of these precious ottos and extracts, when smelt in the bulk, are positively disgusting. Take civet, for instance, which is the product of several animals of the genus *Viverra*, and is a butter-like mass, which darkens on exposure to the air; it has an extremely powerful smell, which is most sickening. Otto of roses, in very great quantity, is unpleasant, and otto of violet is like prussic acid. Musk forms a very essential part of the perfumes, so does Kuromoji, though few persons are aware of the fact. Heliotrope, vanilla, almond, and orange have a cognate smell. Citron, lemon, orange peel, and verbena have similarity of odour. Rose and rose geranium are alike. Patchouli and vilivart resemble each other.

Civet is of animal origin, the civet cat being a native of the hottest parts of Africa, from the Guinea coast and Senegal to Abyssinia. Another species of the same genus inhabits the East Indies, the Moluccas, and the Philippine Islands.

Frangipanni owes its perfume chiefly to mace.

Hyraceum is very little used. It is a secretion of the small rodent Hyrax, common in Egypt. Castoreum is secreted by beavers of both sexes. The contents of the pad are semi-fluid during the life of the animal, but afterwards harden. The whole pad may weigh anything from two to nine ounces, but one of the two found on each animal is usually smaller than the other. The castoreum is a resinous, brownish fragile mass, readily pulverised. The Siberian castor is more esteemed than the Canadian, and has a stronger smell and a more pungent and less bitter taste than the latter.

The scents of the ancients were myrrh, spikenard, and frankincense.

A few kinds of flowers for making perfumery are grown on a small scale at Mitcham, in Surrey, and at Hitchin; also in Lincolnshire. The South Australian Government have recently started an extensive flower farm at Dunolly, with stills of 50 and 300 gallons capacity. It is by the judicious blending of the different essences and concentrated perfumes, obtained as described, that the numerous scents are produced, but it is an art that can only be acquired by long practice. England, however, produces the finest quality of perfumery in the world, and it is coming into increased favour, although the excise duty on spirits prevents this country from fairly competing in her own colonies with her German and French neighbours.

Female labour, so useful in this business, is prohibited altogether by present regulations within British bonded warehouses; while men also are injured in the matter of their wages, no man being allowed to work there after four o'clock. The French Government, on the other hand, offers its manufacturers of these goods every facility.

1,000lbs. of orange flowers yield about 1lb. of essence (neroli).
25,000lbs. of rose yield about 1lb. of essence.
1,000lbs. of geraniums yield about 1lb. of essence.
1,000lbs. of mint leaves yield about ¾lb. of essence.
1,000lbs. of bitter orange (leaves) yield about 1lb. of essence.
100lbs. of lavender yield about ½lb. of essence.
100lbs. of eucalyptus yield about ½lb. of essence.

But, in competition with these floral perfumes, an increasing number are now fabricated from esters, aromatic acids, and various alcohols, and the manufacturer is independent of the flower season. May blossom, meadow bouquet, spring grass, new-mown hay, cyclamen, otto of roses, aubépine, neroline, vanillin, and all the rest of them can easily be produced artificially or synthetically. Tonquin bean is no longer necessary in making coumarin, chiefly in consequence of its production from *Liatris odoratissima*, an American plant; and the odour of Russian leather is easily obtained from

he oil of *betula alba*, or "Kamma." everal kinds of wood are also used in erfumery, such as aloe wood, Brazil or ndian wood, lignum vitæ, juniper vood, rosewood, palisander, Santa Lucia vood, sassafras wood, sandal-wood, etc. The perfumes are obtained in various ways, by grinding, rasping, soaking in vater or spirits, burning, or distilling. As with essential oils, the purity of loral extracts and scents is very difficult o ascertain, but, as a rule, nothing can vell surpass the delicate olfactory nerves n testing perfumes, and the gustatory erves are often of great assistance. By "purity" we only mean freedom from nnecessary substances and from excesive additions of preservatives, for, of ourse, most of the natural perfumes require a certain amount of alcohol or ther substance to preserve them from leterioration, and this cannot be regarded as falsification.

For the St. Paul's "British" perumery, apply to F. Newbery & Sons, 7 and 28 Charterhouse Square, London, E.C.

Periwinkles. — F. *Bigorneaux*; Port. and Sp. *Caracol de mar*.

A sort of sea snail or small shellfish (*Turbo littoreus*, of Lumaeas). They re usually sold by measure, and there re about 2,000 in the peck.

Perry.—F. *Poiré*.

A liquid usually made from the fermented juice of rough, coarse pears, which are less agreeable for eating. The best English growths for perry-making are *Louise Bonne of Jersey*, *Beurré Clairgeau*, *Williams Bon Chrêtien*, *Pitmaston Duchesse*, *Marie Louise du Cornice*, *Marie Louise d'Uccle*, and *Josephine de Malines*.

It is chiefly prepared in the counties of Devon, Gloucester, Hereford, and Worcester, and in the same way as cider is made from apples. Perry is still popular in the above districts, also in Normandy, Brittany, France; but elsewhere it seems to have declined in public favour; both it and cider having been largely driven out by beer.

The best perry contains about 9 per cent. of absolute alcohol, and ordinary qualities from 5 to 7½ per cent. When bottled in the style of champagne, it is often sold as such.

Persian Berries. — See *Yellow Berries*.

Persian Insect Powder.—See *Insect Powder*.

Persian Tombak.—A sort of tobacco known as *Nicotiana Persica*, and cultivated in Persia only. The best is that grown in the province of Chiraz, about 2,000 bales a year, which is almost entirely consumed by members of the Imperial Family, and the price paid for it is about 50 or 60 francs per oke (2·8lbs.). The province of Kechan produces the second quality. These leaves are as small as the Chiraz tombak, but the yield is not so abundant. The third variety is that grown in the province of Ispahan. The leaf is large, and it is grown and used in the same way as tobacco. The seeds are sown in May, and the leaves are gathered in September to December. Cut and spread out on the ground, they are exposed to the dew for about 48 hours, and this stains them with little black patches. When cured, they are made up in bales, called torba, and bound in American cloth and sheepskins. So far it has not been found possible to grow the plants anywhere else to perfection.

Persian White Tea.—See *White Tea*.

Persicat, or Persicot.— A liquor or cordial made by steeping in spirits, lemon peel, spices, and the bruised kernels and leaves of peaches.

Confectioners may fill up a bottle with good, clear, young peach leaves and a few kernels, then pour in as much as possible of good brandy. In six weeks strain, sweeten with syrup, and bottle.

Persimmons.—The Indian name for the small olive-like fruits of the date plum, or *Diospyros Virginiana*, a member of the order *Ebenaceæ*, and of which

there are several varieties, but which are in no way allied to the plums and damsons cultivated in England, these latter being rosaceous plants.

The trees grow wild in the Southern States of America, and are generally of small size, but sometimes grow 50 to 70 feet high, with a diameter of 2 to 3 feet when grown in a forest.

The wood, known as ebony, is very hard, black, and often used as boxwood in making shuttles, etc. The flowers are usually pale yellow in colour, and the fruit-stalk is very short.

The fruit, about the size of an ordinary plum, ripens as far north as 41° N. in the United States, and is of globular form; but it attains its greatest perfection in the North of China and Japan, where the golden fruit is larger than an orange. There are whole orchards of them grown in the Ming tombs.

Persimmons in their unripe state are very sour and astringent, which quality they do not lose till thoroughly ripe or frosted, when the pulp becomes yellow, soft, very sweet, and agreeable in flavour. In Japan, however, one variety of persimmons is eaten and relished when green and young, and some say it is nicer than when thoroughly ripe.

The *Goshio*, a one-seeded variety, is considered the best. Its meat is a bright yellow, while nearly all others have dark flesh, are more or less puckery, and contain four or five seeds, but the seedless varieties are usually quite small.

Some of the most approved American varieties are the Shoto, slightly conical, and dull yellow in colour; the Golden Gem, roundish-oblong, dark orange to red in colour, flesh soft and very rich and sweet; the Daniel Boone, yellow with a dull blush in the sun; the Hicks, of rich mahogany colour; the Kansas, roundish, splashed with red on yellow ground, flesh tender, rich, and highly flavoured; the Smeech, dull yellow with red splashes, very rich and sweet; and the Early Golden, oblong, rich, yellow, very sweet and of excellent quality. The fruits seldom rot, but dry up, and may thus be held over till March or April by simply keeping them in a cool, dry place. Its long-keeping qualities enable the grower to ship his fruit to distant markets without fear of loss from decay. Several other points favouring the introduction of persimmon as a commercial fruit might be noted. The persimmon has a food value considerably greater than any of the common American fruits, and the fact that it withstands frost and that it flourishes on land of little value for other crops indicate it to be well worthy of the attention now beginning to be devoted to its culture.

Peru Almonds.—A name formerly used for *Brazil nuts.*

Peruvian Bark.—See *Quinine.*

Peruvian Sugar.—Sugar cane is the chief agricultural industry of Peru, and both climate and soil are well adapted to it. The cuttings, when planted, require two years to come to maturity, and then, in the latitude of Lima, the plants will yield for three years without renewal. In the sugar districts in the north of Peru the cane roots yield crops during six years. From 50,000 to 80,000 tons a year are exported. The principal sugar districts are in the valleys of Lambayeque and Chicama, in the north of Peru, although there are several large plantations in the valleys of the Rimac.

Petits Fours.—The French generic name for fancy cakes or pastry articles. *Petits Fours secs* are cakes, dried in a gentle heat, and decorated with sugar, fruits, almonds, etc., like *macaroons.* They are usually made at biscuit factories, and intended to keep a long time.

Petits Fours frais comprise short cakes, tarts, cheese-cakes, and other trifles made by pastry cooks for use while fresh.

Petits Pois.—See *Green Peas.*

Petroleum.—F. *Pétrole*; G. *Erdol.* (See also *Oils.*)

PETROLEUM—(continued).

From Latin *petra* (rock), and *oleum* (oil). A brown, green, or yellow liquid bitumen, often called *Coal Oil*, *Earth Oil*, etc. It is a kind of naphtha, or rock oil, found floating on the surface of water, oozing from crevices in rocks, or exuding out of the ground into wells, in various parts of the world, but especially in the Caucasus Mountains. At Groznoi, in Caucasus, it is said to rise in jets which yield about 500 tons an hour. It is also found in Pennsylvania and other American States. In 1897 a good quality was discovered at Corsicana, in Texas, and, although a little inferior to the Pennsylvanian, is considered superior to the oil of Ohio. England now imports about twice as much from America as from Russia.

A peculiar fact in regard to petroleum is the difference of conditions under which that oil occurs in Russia and America. In the former it is found in strata of the tertiary period, usually a formation resembling a quicksand, and at depths of only a few hundred feet; in America it occurs at great depths in the older compact sandstones and limestones of the Carboniferous, Devonian, and Silurian periods. The oil of Russia consists of a class of hydro-carbons known as naphthenes, belonging to the benzine groups; while the American oil is composed mainly of paraffins; it is to this difference that the great variation between the products from these oils is due, for, while American oil yields a very large proportion of, say about 70 per cent., of illuminating oil exactly suited for combustion in lamps, the Russian oil produces far less of such oil and a larger proportion of high-class lubricating oil. The Russian also requires to be burned in a modified form of lamp with a more perfect draught in order to overcome its tendency to produce a smoky flame, and it is largely this fact which has prevented the consumption of Russian oil for lighting purposes.

Petroleum is highly inflammable, being essentially composed of carbon and hydrogen. America produces about 50,000,000 barrels a year, and Pennsylvania is the main centre.

It is not known exactly how the oil is made in the earth, but the general opinion seems to be that it is a distillate of organic matter, chiefly vegetable, produced by chemical action in the earth.

This kind of "oil of the rock" was burned by the fire worshippers of Persia long before the birth of Christ. In North's translation of *Plutarch's Lives* (1631, p. 702) we see that petroleum was known in the time of Alexander the Great:—"For a Macedonian called Proxenus that had charge of the kings cariage [baggage], as he digged in a certaine place by the riuer of Oxus, to set vp the kings tent and his lodging, he found a certain fat and oily veine, which after they had drawn out the first, there came out also another clearer, which differed nothing, neither in smell, tast, or savour, from natural oile, having the glosse and fatness so like, as there could be discerned no difference between them; the which was so much the more to be wondered at, because in all that country there were no oliues."

But it appears to have been long lost sight of, because, although a trace of it was found again, it was not until 1859, when the oil was struck in America, that the petroleum industry began to develop to the enoromous extent it now assumes.

The existence of petroleum has even been detected in this country at different times, especially in the West of England. Considerable interest was excited in 1894 by a discovery of this kind at Askwick Court, in Somersetshire. If of no commercial importance, the matter is still one of the greatest historical interest, as the shale oil industry is the direct outcome of the distillation of a small outflow of petroleum at Alfreton, in Derbyshire, and the American petroleum industry itself may be indirectly traced to the same source. Numerous references to the occurrence of "naphtha" or "liquid bitumen," and even to emanations of natural gas, occur in the early numbers of the "Philosophical Transactions of the Royal Society." In the volume for 1684, is a paper by Dr. Robert Plot, in which he expresses the belief that the

PETROLEUM—(continued).

perpetual lamps said to be found alight in ancient tombs might be formed of a wick of "linum asbestinum," or "salamander wool"—the material which we now call asbestos—fed by a natural spring of naphtha such as that of Pitchford, in Shropshire, where, he says, "is a naphtha or liquid bitumen which constantly issues forth with a spring there, and floats on the water." This spring, which is still in existence, at one time (at the beginning of the century) had considerable celebrity, as the oil was distilled and sold as "Betton's British oil," as a cure for sprains and rheumatism; indeed, it is one of the very earliest localities where petroleum was distilled for commercial purposes.

Similar occurrences were noticed at Broseley, Bently, and other districts in Shropshire, and Camden's "Britannia" (1586-1607) described oil and gas springs at Fife, and at Formby and "Wiggin," in Lancashire, and the "boyling" of eggs by the burning of gas, although the water through which the gas issued remained cold. Petroleum was found quite two hundred years ago at St. Catherine's Well in Liberton, and is still found at Longton, in Staffordshire, Coalbrookdale and Wellington, in Shropshire, at Worsley and West Leigh, in Lancashire, and in the neighbourhood of Bristol. In the Southgate Colliery, near Chesterfield, there is an intermittent flow of petroleum, amounting to from seventy to one hundred gallons daily. The most interesting occurrence of petroleum in this country is, however, one at Alfreton, in Derbyshire, where a small stream of oil from a coal-working attracted the attention of Dr., afterwards Lord, Playfair, and was, in 1847, distilled on a commercial scale by Dr. James Young, the father of the shale oil industry of Scotland. When this supply became exhausted, as soon happened, Dr. Young, believing that the oil had been produced naturally by the action of gentle heat on coal, commenced the experiments which resulted in 1850 in his celebrated patent for obtaining paraffin and paraffin oil from bituminous coal, and ultimately to the extension of this process to the bituminous shales of Scotland. Erroneous as were Dr. Young's premises, the whole of the Scottish shale oil industry is the direct result of them, and the commencement of the American petroleum industry may also be traced to them. Shortly after the inception of the Scottish industry, a large number of establishments, working under royalties from Young's Company, were in existence in the United States, and by 1859 there were between fifty and sixty in existence. In that year, in the hope of obtaining larger quantities of the crude petroleum which was found superficially in many districts of Pennsylvania, and was then still believed to be a product of the natural distillation of coal, the celebrated "Drake" well was sunk at Tarentum, in Allegheny, and started the oil fever, of which the present position of the American petroleum industry is the outcome. The production of these immense quantities of oil without the cost of winning and distilling shale or coal, naturally struck the death-knell of the shale distilleries of the States, which with the ready adaptability of the American people, were, however, at once converted into petroleum refineries; but the Scotch shale oil industry, although severely handicapped, has, so far, been able to exist.

Perhaps the freight charges on the foreign oil are a set-off to the extra cost of the home production. The present annual production in the United States of America alone is about 50 million barrels of 42 Winchester gallons each. The Trans-Caucasus or Baku field in Russia (see *Naphtha*) produces quite as much, and, in addition to these two great oil-fields, it is also obtained in many other regions, but in minor quantities.

The principal European districts are Baku, Batoum, Grosney, Galicia, and Roumania, all of which produce large quantities and by very primitive methods. Pechelbronn, in Elsass, Germany, promises well; Canada has large supplies at Petrolia, in the Province of Ontario. The West Indies, Venezuela, Peru, and other South American countries likewise yield petroleum in greater or less abund-

ıce. It is also obtained in Burmah, hina, India, Japan, and to a greater tent still in the Dutch East Indies. ut as far as British shop trade is con-rned, petroleum oils come only from merica and Russia.

In America the crude oil is nowadays ostly transported from the wells to the fineries, and thence to the holds of the sport ships, through 6 or 8-inch pipes, ften hundreds of miles in length, a ngle ship having capacity for carrying ver 4,000 tons of oil.

The production of crude petroleum in ıe Pennsylvania oil-fields has been quite progressive business from a very in-gnificant beginning. In 1859, when olonel Drake sank the first oil-well, and btained a few barrels of oil per day, e probably had no idea of the growth nd magnitude of the business as it is) be seen to-day, with its 12,000 pro-ucing wells; with its daily production f 60,000 barrels of crude oil; with its oo iron tanks with storage capacity for o,000,000 barrels, with 8,000,000 barrels f stock in the tanks; with its refining apacity of 60,000 barrels per day; with :s 3,000 miles of pipe-lines, for carrying he product to the iron tanks and re-neries; with its 3,000 tank-cars, with apacity to transport 250,000 barrels of il; with its 2,000 miles of iron ubing and casing used in and around he wells; with its 12,000 engines and o,000 boilers used at the wells; with ts 200 miles of rope cable, and its 500 ons of iron and steel, used in drilling he wells; with its export trade with all he countries of the world of 40,000)arrels per day, and its home consump-ion of 10,000 barrels per day!

Crude petroleum is the source of over :oo different products, including various nixtures of hydrocarbons, which are known in commerce, *naphtha*, *benzoline*, *Kerosene*, *lubricating oils*, *paraffin*, and *)aseline*, which are all separated from)etroleum by fractional distillation, followed by a system of chemical purifica-ion by which all colouring matters and ll-smelling substances are separated or leodorised.

In the Bastille quarter of Paris there are *Petroleum Tiplers*, but we have not yet imported that bad habit into England, although we have individuals who "keep their spirits up" by swallowing spirits, both rectified and methylated, and even to "pick 'em up" will not stick at ether, but we have not descended to petroleum.

Petroleum, or other lamp oils, with a flashing point *below* 75° F., or any quantity under three gallons (if kept in separate vessels, not exceeding a pint each), do not require a licence for storage, transport, or sale; but for "spirit" and benzoline, which give off inflammable vapours, a licence is imperative.

To know whether petroleum is dangerous or not, fill a cup three parts full of the oil, then fill up with boiling water, at the same time holding a flame over it. If the vapour takes fire the oil should be considered unsafe.

In order to prevent leakage, the barrels are coated internally with either a glue solution or a mixture of glue and molasses. About 1lb. of glue dissolved in hot water suffices for 3 barrels. The solution is poured in hot, the barrel is then bunged up and rotated so that the solution coats the entire surface, the surplus being afterwards drained out. There is some pressure of steam in the barrel during the operation, and a leak is thus at once shown. The barrels finally receive a coating of the well-known blue paint on the staves and white paint on the heads. Several explosions have occurred in examining dirty barrels by bringing a light too near to the bung-hole. (See also *Lamps*.)

A gallon of fine petroleum weighs 8lbs. if American, and 8¼lbs. if Russian.

Petroleum Briquettes. — See *Briquettes*.

Petroleum Jelly.—A mineral fat of white, red, or yellow colour, produced from petroleum oil. Much the same thing as *Paraffinum Molle* and "*Vaseline*." The best is free from saponifiable fat, resin, and ash, and should have a high melting point, say, 85 to 95° F. The best is of white colour, filtered, and quite free from taste and smell. A special kind is made of a more tough and stringy consistency.

Special Firms.—M. E. Holdsworth, 3 Norfolk Street, Bradford; Kimpton Brothers, 36 and 37 Mincing Lane, London, E.C.; C. Windschuegl & Co., 1 Leadenhall St., London, E.C.

Petroleum, Solidified.— "*Solidified petroleum*," which is employed to a slight extent as fuel and for laundry use, as well as a lubricant, is usually prepared by incorporating liquid petroleum with soaps, or by saponifying fats in admixture with petroleum.

Petroleum Spirit, or **Ether.**—See *Benzoline.*

Pheasants.—The most beautiful of all feathered game. Are more abundant in France, and many other European countries, than in England, but the British birds are esteemed the most. Pheasants are in their prime in October, and it is considered an improvement in flavour if kept about a week. The hen birds are smallest and most delicate.

Those preserved in tins are of foreign origin.

Phenol.—See *Carbolic Acid.*

Pia, or **Otaheite Arrowroot.**—See *Arrowroot.*

Piccalilly Pickles. — (See also *Pickles.*) — The origin of the word *Piccalilly*, or *Piccalilli*, is very obscure.

The excellent pickle put up under that name simply consists of ordinary mixed pickles immersed in a special liquor. It is customary with some manufacturers to use up inferior damaged vegetables, cauliflower stalk, spotted or unshapely onions, gherkins, etc., for piccalilly, where they are generally cut up small, and the defects obscured or hidden by the yellow liquor.

There are very few people, even manufacturers, who know how to make piccalilly liquor properly, and so as not to settle in the bottle, leaving the upper portion of the liquor pale and watery.

Piccalilly pickles should not be exposed to the sun, or it will spoil their bright colour.

How to prepare Piccalilly Liquor.—Put into a large pan, say, 7lbs. mustard (say Keen & Co.'s "Seconds"), ¾lb. best ground turmeric (not cheap, dark, and musty), 2 ozs. finely-ground cayenne, and 6 gallons vinegar (or 5 gallons of water and 1 gallon of ordinary acetic acid). The addition of 2 ozs. gum tragacanth, well dissolved, is a great improvement. Stir the whole well till of equal consistency, and heat it to boiling point, stirring carefully the whole time. Then put it through a tamis or fine hair sieve, and, when cold, pour into pint bottles, till about one-third full, and then fill up tightly with the mixed vegetables, pressing them well down with a stick, finally corking and capsuling in ordinary way.

Special Manufacturers:—Allen Jeeves & Sons, Seddington, Sandy, Beds.

Picholine.—See *Olives.*

Pichurin Beans, or **Sassafras Nuts.**— These consist of the isolated lobes of the droop of *Nectandra pichuri*, H.O. Lauracœ, and are now being used largely for flavouring chocolate.

Pickled Bamboo.—See *Achia.*

Pickled Eggs.—See *Eggs.*

Pickled Herrings. — F. *Harengs blancs, frigards.* (See also *Herrings.*)

White or pickled herrings are those which, on being caught, are landed, salted, and packed in kegs, tubs, barrels, or cases, with layers of bay salt. *Lochfynes* are very salable in kegs, at 4/- to 4/6 each.

Pickled Limes. — (See also *Lime Fruit.*)—These are mostly imported from Brazil, in small kegs of about 7lbs. weight, and consist of the small-fruited sweet lime. They are about one-third the size of the common lemon, and of a yellowish-green colour when ripe, but in order to preserve the pleasant aroma of the rind they are often preserved while quite green.

To Pickle Limes.—Allow the limes to remain on the trees until bright yellow, then pick, and put into tight barrels or casks, and immediately cover with either sea-water or water and rock salt. This is necessary, as the pores of the skin seal over soon after being picked, and will

not then take the pickle. Renew the salt water in a week, then fill the barrels solid with the limes, because they afterwards shrink, and when coopered water-tight they are ready for market.

Pickled Pork or **Mess Pork.**—F. *Porc Salé*; G. *Gesalzenes Schweinefleisch.* (See also *Pork, Bacon, Swine,* etc.)

This is usually prepared by rubbing pieces of fresh pork with a mixture of salt and saltpetre (say, 8 parts of salt and 1 of saltpetre), then packing it tight in a water-tight barrel or tub, covering each layer of pork with salt. When full, it is pressed well down, and the cask headed up air-tight. It will keep good for two or three years.

Another good mixture for salting is 2lbs. salt, 2ozs. saltpetre, and 1½ ozs. moist sugar, rubbed well into the meat. When the brine, as it forms, is drained away from the meat it is called *Dry-salting.* If it be allowed to remain on it is called *Wet-salting*, or *Pickling.* An excellent brine is made with 4lbs. salt, ½lb. to 1lb. sugar, and 2 ozs. saltpetre in 2 gallons of water.

Brine in time becomes diluted by the meat juices, and is apt to turn foul, therefore at intervals it should be boiled down with more of the salt, sugar, and spices, and the impurities skimmed off.

American Mess Pork consists of the sides of the thickest and fattest hogs, cut into 4lb. strips, 6 or 7 inches wide, running from back to belly; "ordinary" is made from pigs weighing 150 to 200lbs.; "prime" from smaller sizes, weighing, with shoulder, 100 to 150lbs.

Large quantities of pickled heads, tongues, ribs, and feet come from Ireland to England in casks, and are retailed in poor neighbourhoods at very low prices. Like all other foods in salt, they should always be kept covered with brine, if possible. Such pork requires washing and soaking in two or three waters, so as to get the salt out of it, before cooking.

Pickled Teas. — See "*Burmese Pickled Tea.*"

Pickles. — F. *Legumes confits au vinaigre, Variantes*; G. *In essig eingemachte Gemüse*; Malay, *Achar.* (See also *Vegetables in Brine.*)

The familiar condiments passing under this generic term in England include—*Mixed Pickles, Onions, Piccalilly, Gherkins, Walnuts, French Beans, Cauliflower, Chow-Chow, Red Cabbage, Red Capsicums, Onions in Piccalilly liquor*, and *Sweet Pickles.*

Pickles are almost a necessity to people who eat much cheese, but they are not very digestible, and a too free use of them is said to be injurious. They sell best during spring and early summer when vegetables are scarce, and the human appetite seems to yearn for them.

London is the chief centre of the pickle industry. It is remarkable how that even country people must buy London pickles. Nearly every village shopkeeper must needs keep a stock. Even when "home-made," so to speak, the *home* must be *London.* The penny cabbage must go to the metropolis to be operated upon by workers from the slums, and return to its native district cut up and divided into some half-dozen eightpenny pint bottles before it is fancied. It is the same with cauliflowers and onions; no country labourer's wife can apparently be trusted to peel, dress, and pickle the local growths, they must perforce go to London. Whether it is the ornamented label, the silvery, shining capsule, the exuberant display of signature, seals and prize medals, or mere fancy, is immaterial, but it seems an absurd fashion. If, however, the consumers could see the "hands" who work on the vegetables at these large factories, it is probable the fancy for them would cool.

Each kind of pickle is more fully described under its particular name, but almost every housewife knows sufficiently well how to prepare them without any elaborate detail here. (See *Mixed Pickles, Piccalilly,* etc.)

A copious supply of fresh clean water and thorough cleanliness of the premises are important desiderata in pickling. Vegetables naturally produce by decomposition a gas called sulphuretted hydrogen, and this exercises an unhealthy influence. Every day the factory should be cleared of all vegetable substances

which have become old or are beginning to decay, and betray an evil odour.

In factory-made pickles, the chief art seems to be in filling and finishing off the bottles, but it is all done by hand. Attempts have been made to utilise machinery for the filling, but without success. A method by which months of time may be saved is to exhaust the vegetables under an air-pump, and then force into them spiced vinegar under a pressure of about 45 lbs. per square inch.

Large quantities of onions and cucumbers are raised around Sandy, in Bedfordshire, and other districts, but by far the greater quantity of the vegetables come in salt and water from Holland and France (chiefly from Amsterdam), and a few are now coming from America.

Cauliflowers are generally artificially dyed a bright yellow colour with ground turmeric, which improves the appearance, but imparts a more or less earthy or musty flavour to the vegetable. The *onions* are not always of the small, tender, "silver-skinned" variety, but sometimes large and coarse, requiring to be cut into halves or quarters before they can be got into or out of the bottles. Some of the small white onions may be very uniform, tender, and handsome in appearance, but at the same time very insipid and almost tasteless.

The *gherkins* and small cucumbers should be firm, tender, and crisp, but sometimes they are spotted black or brown; and for cheap pickles large, soft and flabby cucumbers, with the seedy insides removed, are often cut up and used. The gherkins and cucumbers used to be "greened" with bluestone (sulphate of copper), but this practice seems to have been discontinued, and boiling in copper vessels, or along with scraps of copper, are manipulations now only resorted to by a few manufacturers. *Red Cabbage* is, perhaps, the most risky pickle for a retailer to stock. It will seldom keep good long, but turns soft, pale-coloured, and unsalable. It should never be kept over a month or two by retailers.

For pickling, the vinegar should be strong, free from alcohol, and containing the minimum amount of colouring matter and sugar; hence the pickling vinegar used in most factories is often merely acetic acid and water, say 1 part of commercial acetic acid mixed in 5 to 8 parts of cold water, and slightly coloured with caramel (burnt sugar) to the shade desired. Pickles, especially the cheaper kinds, are often made up of waste cauliflower stalks and trimmings, and when kept long are apt to go mouldy at the top. This scum, or film, may be owing to weakness of the vinegar used, or to bad corking, which has allowed the strength to evaporate, or it may be owing to the excess of salt left in the vegetables killing or neutralising the vinegar. They should never be retailed in this state, for although the pickles are little worse when the white scum is removed, the consumer is usually much alarmed, and will not eat them.

It is therefore best either to return the pickles to the maker, or to screw off the capsule deftly by hand, prise out the cork, take off the mould, also any portions of vegetable to which it may have attached itself, and fill up again with a little fresh vinegar, and then replace the cork and capsule. Care must be taken not to shake the bottle, or it will be impossible to separate the mould. If the mould is allowed to remain long it will spoil the flavour of the whole contents, but if removed as soon as observed there need be no loss. Port wine in casks is often covered by a similar filmy formation.

There seems no reason why retailers should not prepare their own pickles—at any rate, to a great extent. The only difficulty would be the showy bottling, but that might be got over by packing the pickles in either stone jars or bottles of coloured glass. The profits would far exceed the meagre percentages now obtained, and a reputation of value might be gradually built up.

Special firms:—Allen Jeeves & Sons, Seddington, Sandy, Beds.; Charles Cocks & Co., Reading; Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool.

Pickling Spice.— Retailers may either buy this ready mixed, or prepare

it for themselves. The following are a few ordinary mixings:—

1. 1½lbs. mustard seed, 2½lbs. black pepper-corns, 1½lbs. white pepper-corns, 2lbs. cayenne pods, 2½lbs. pimento, 1½lbs. long pepper, 2lbs. Jamaica ginger, ½lb. small mace. Total, 14lbs.

2. 2½lbs. mustard seed, 2lbs. cayenne pods, 2½lbs. common black pepper-corns, 1½lbs. white pepper-corns, 1lb. long pepper, 3lbs. pimento, 1½lbs. Jamaica ginger (No. 2). Total, 14lbs.

3. 1½lbs. cayenne pods, 2¼lbs. black pepper-corns (No. 2), ½lb. white pepper-corns (No. 2), 4lbs. pimento, 1lb. long pepper, 3lbs. mustard seed, 1½lbs. Jamaica ginger, ¼lb. broken mace. Total, 14lbs.

4. 2lbs. cayenne pods, 2½lbs. black pepper-corns, 1lb. white pepper-corns, 1lb. long pepper, 3½lbs. pimento, 2lbs. mustard seed, 1½lbs. Jamaica ginger, ½lb. broken mace.

Picnic Biscuits.—A kind of small sweet biscuits. The name "Picnic" was originally given to an entertainment, in which every partaker contributed a share to the general table (see *Biscuits*).

Picnic Hams. — F. *Jamboneaux* (false hams). These so-called hams, being carved from the shoulder of the pig, are very tough, stringy and coarse. They are not stocked by many respectable grocers.

Picul (pr. pickle.) — A Chinese weight, equal to 133⅓lbs. English, or 100 catties, or 1,600 taels. It is a popular weight throughout the East, for coffee, tea, sugar, etc.

Pigeon Peas. — See *Chick Peas, Dhal*, etc.

Pignolia Nuts (sometimes spelt *Pignoli* and *Pygnola*).—These nuts are often used as a substitute for almonds in cakes, etc. (See *Pinone Nuts.*)

Special Merchant, M. E. Holdsworth, 3 Norfolk Street, Bradford.

Pigs, Hogs, or Swine.—F. *Porcs;* G. *Schweine;* Port. *Porcos;* Sp. *Cerdos, puercos.*

These, if not strictly articles of grocery, are often traded in by grocers, especially in country towns and villages. There are many different species of swine; the chief, however, being the familiar and domestic pig, which is of the order *Mammalia*, of the genus *sus scrofa*, and of the species called *pachydermata*, or thick-skinned.

It was in the last century common, in a wild state, even in England (see p. 121, also *Wild Boar Heads*), and there are traces of the wild boar still to be found in the active and fierce forest pigs of Hampshire, with their high crests, broad shoulders, and thick, bristling manes. Both to the Jews and to the Mahomedans the pig is a forbidden article of diet, but they are often seen to trade in its products. The English people are fonder of its flesh, and pay higher prices for it, than any other nation, and it is probable the pig is more eaten in this country than any other animal. Some 2½ millions are killed in the United Kingdom yearly, not to reckon the imports. Although more of a vegetable than an animal feeder, it is decidedly *omnivorous* by nature, as evidenced by the number and position of its teeth; and, unfortunately, too many pig-feeders take advantage of its accommodating appetite, by keeping it on the cheapest and worst kind of garbage, and in a small unhealthy sty, but the flesh of such animals is always flabby and of ill savour, and often injurious to those who partake of it.

Pigs devour their food with great rapidity. The front teeth only do the duty of picking up the food, and the side teeth are unable to masticate it sufficiently or to mix it with saliva. It is therefore best to supply their food in a form easy of digestion. Dry corn, when given to swine, is passed away in an undigested condition to the extent of 50 per cent. It should be first boiled, steamed, ground, bruised, or soaked.

Maize or rice meal, mixed with potatoes or sliced roots, and especially when a little animal matter is added, soon shows excellent results in feeding; and *cooked* food is better for them. A daily

combing, brushing, or washing also is good.

The best bedding for pigs is peat dust. They should not be fed too much on flesh meat, nor surfeited with an unlimited amount of swill, but eat most and thrive best when kept dry and comfortable, and fed with regularity two or three times a day. A few cabbage leaves or other vegetables and a handful of charcoal should be thrown to them once or twice a week. A vessel of *clean soft* water should always be provided to quench thirstiness.

In its free, or wild state, the hog is by no means a dirty animal. It wallows in mud only to cool its skin and to drive away insects, but elephants and many other animals do the same thing. Its sense of smell is remarkably fine, and in France, pigs are made to hunt for *Truffles*. In China, they are harnessed and made to draw wagons, and in Servia pig-keeping is the leading industry.

In Ireland, piggie is important as "the jint that pays the rint."

In the districts around Athlone especially, large numbers are fed for the Limerick, Waterford, Dublin and English markets, and in Tralee, Co. Kerry, a new and handsome bacon factory has just been started by the Manchester wholesale Co-operative Society in conjunction with its Irish creameries and butter factories. A good bacon pig of 12 stone, dead weight, may be produced in seven months from its birth.

The "Large Whites" are the best from the bacon-curer's coint of view, and of the Large Whites the Yorkshires bear away the bell. Berkshire pigs are best for early maturity and quick growth, but Suffolk and Essex breeds have gone out of favour. *Tamworths*, once very popular, have deteriorated, although still good for crossing with the Black breed. In America the Berkshire is the ruling pig, although perhaps not the best that could be chosen. The Cheshire is a good breed, but neglected. The Welsh and Irish might be advantageously replaced by English breeds.

It is estimated there are upwards of *twenty* millions of pigs kept in Great Britain, almost every family in the country districts engaging more or less in rearing or feeding them, but there has been a falling off these last ten years. The general characteristics of a good pig are cheerful temper, chubby head, and not too large, chest deep and broad, limbs largely arched, the neck short, body and ears long, and stomach large, tail well set, and not too high nor too low, bristles few and soft, approaching to thin, fine hair—hair being always an indication of leanness—while the skin is also soft and elastic.

Pigs are divided by farmers and butchers into three classes — *large breeds*, 600lbs. to 1,000lbs.; *middle*, 400lbs. to 500lbs.; *small*, 200lbs. to 300lbs. A pig may be said to arrive at maturity at 18 months old. They are, however, fattened at all ages, and may weigh about 180lbs. at 6 months, 240lbs. at 8 months, 300lbs. at 10 months, and 360lbs. at 12 to 18 months of age, carcass weight. The weight of pigs is usually given in *scores* (20lbs.), but often in *stones* (14 lbs.), and in trade quotations in the papers, it is commonly given in Smithfield stones (8 lbs.). Its flesh constitutes *Bacon*, *Bath Chaps*, *Brawn*, *Hams*, *Lard*, *Pork*, *Sausages*, etc., which are described elsewhere.

Immense numbers of "hogs" are bred and fed in the United States chiefly on maize (see *Pork*, *American Bacon*, etc.), but maize-fed bacon is very soft and oily, and very inferior to English, Irish, or Danish.

The great slaughtering yards are at Chicago, St. Louis, Cincinnati, and so completely is every portion of the animal utilised that it is commonly averred nothing of him is lost except his grunt.

Canadians are more in favour than States, and their flesh fetches much higher prices. This is no doubt owing to Jack Canuck feeding them on better fare—peas, oats, and barley, mixed with milk. (See also *Swine*.)

Pig Powders.—These are intended to aid in fattening, and usually consist of fenugreek and liquorice powder, say four parts of the former to one of the latter. An ounce per day of the powder is mixed with the ordinary food of the animal.

Gardner's patent "Rapid" Sifter and Mixer, freely used for above. Prices from 50/- to £100. Catalogues from Wm. Gardner & Sons, Engineers, Gloucester.

Pigmy Coker Nuts. — These miniature coker nuts were first discovered by Stanley in Africa. They are smaller than walnuts, but otherwise exactly like coker nuts, and are very greatly favoured by juveniles.

Pikea, or Piquia Oil. — A concrete yellow fat or oil, with a fresh and agreeable pineapple odour. It is yielded by the nuts of a tree of the Souari nut family, probably *Caryoca brasiliense*, and is used by the Brazilians instead of butter.

Pikelets.—A pikelet proper is a muffin baked without a hoop, and so it is much larger in circumference, and nearly as thick as a muffin, though not so nice to look at.

Pilchards.—Da. *Sardine;* Du. *Sardijn;* F. *Sardines;* G. *Pilscheren;* It. *Saracea;* P. *Sardinha;* Sp. *Sardina;* Sw. *Sardin;* R. *Sardyoll;* W. *Penwag Mair.*

A species of herring, but smaller, fatter, rounder, fuller of oil, and with fewer but larger scales; the under jaw is also shorter in proportion, and turns up; the lines on the back are straighter, the back is more elevated, and the dorsal fin of the pilchard is of dusky colour, also further forward, and in the centre of gravity of the fish.

Pilchards (*Clupea pilchardus*) are, indeed, considered to be of the same species as sardines, and although there are apparent differences in the habits and sizes of these fish (sardines being decidedly smaller and younger), yet no structural differences have been discovered which clearly separate the two as local races or varieties. (See *Sardines.*)

The habitats of pilchards are off the south-west coasts of Devon and Cornwall, and Cork and Kerry, on the south coast of Ireland. As many as 1,500 hogsheads of these silvery dainties have been caught in Mount's Bay, off St. Ives, in a single day. The spawning season is of five months, from end of May till end of October, and the young pilchard attains full size in about two years. They are from six to ten inches in length, and are mostly caught in drift-nets with a mesh of thirty-six to thirty-eight per yard, between July and September. When landed they are gutted and salted in watertight vats, and left covered with brine. In a month or two after they are again washed and cleaned, and then packed in hogsheads, each holding 2,000 to 3,000 fish, or piled with layers of salt in large heaps on the cellar or warehouse floor. They are afterwards subjected to pressure, and yield two or three gallons of oil, which is mostly used for leather dressing. Twelve to fifteen thousand of these hogsheads—each containing about 4½ cwts. of pilchards—are exported every year to the Mediterranean, chiefly to Naples and Italy, and used as food during the numerous fasts appointed by the Roman Church.

Pilchards in Oil are extensively prepared at Mevagissey and Newlyn, in Cornwall, and put up in tins, same way as sardines in France and sprats at Deal.

It is not very easy to describe for certain the difference between these cooked pilchards and ordinary "sardines." Perhaps the whiter colour and size of pilchards is the chief difference. The Cornish catch averages over 10,000 tons yearly. When salted and smoked they are in Cornwall called "Fairmaids," a corruption of the Italian word *fumadoes.*

In counting pilchards, 10,000 equal 1 last, and 120 equal one hundred.

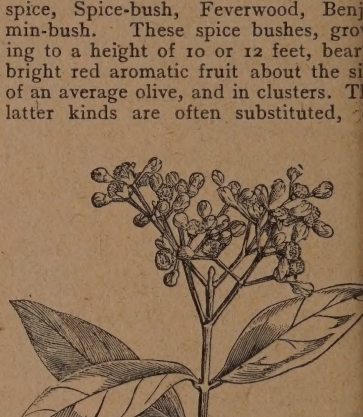
Pilsener Beer.—The name of a famous Austrian white beer, from Pilsen, in Bohemia. It is the favourite drink in Vienna.

Pimento, Jamaica Pepper, or Allspice.—Da., Du., and Fr. *Piment;* G. *Nelkenpfeffer;* It. and Port. *Pimenta;* Sp. *Pimienta.*

The dried, nearly ripe berries of the

PIMENTO—(continued).

Pimento tree, known as *Eugenia pimenta* or *Pimenta officinalis*, and belonging to the same botanical family (myrtle) as the Guavas of Brazil, the May apple and the Rose apple of the East Indies, the clove tree of the Moluccas, and the Eucalyptus or gum tree of Australia. The tree is a fine evergreen, growing twenty to thirty feet high, with a slender, straight, and upright trunk, much branched at the top, and covered with a smooth, grey, aromatic bark. It is very common in Jamaica, West Indies, and South America. Its leaves are of oblong or oval shape, of a deep shiny green colour, about five inches long, and, when fresh, abound in essential oil. It is largely cultivated in plantations called "Pimento walks," also grows to perfection, in a wild state, in Jamaica, whence British and American importations have been mostly derived; hence the name *Jamaica Pepper*. The heads of the trees are covered with bunches of fragrant white blossom in July and August, and soon afterwards the smooth, shining, and succulent berries are formed and picked, full grown, but unripe and of a greenish-purple colour, when they are most carefully dried in the sun or in kilns until dark brown, and then separated from the stalks, and filled into bags. The berries are light and brittle, of roundish form, and crowned with the remains of the calyx, generally in the form of a raised, scar-like ring. Each corn contains two dark brown reniform or kidney-shaped flattish seeds. They are called "Allspice," from the fancy that they have the flavour of cinnamon, cloves, and nutmegs combined. They must be gathered immediately they are ready, or they spoil quickly. If allowed to ripen on the tree the berries lose most of their flavour, and become merely sweet and pulpy. The corns are about the same size as peas, and are sometimes adulterated with mustard husks. There are also inferior kinds, such as *P. acris* and *Tabasco Pimento*, a Mexican variety, with a larger berry, but less aromatic. To secure uniformity of colou these inferior kinds are oft coloured with Armenian bol The Allspice tree of the United Stat is the common sweet-scented *Calyca thus Floridus*, six or eight feet hig with an odour rather like strawberri *Japan Allspice* is a common name f the allied shrub of Japan, *Chimona thus fragrans*. *Wild Allspice*, a speci of the laurel order, is a name sometim given to the aromatic *Lindera Benzoin* America, also known as the Wild A spice, Spice-bush, Feverwood, Benj min-bush. These spice bushes, gro ing to a height of 10 or 12 feet, bear bright red aromatic fruit about the si of an average olive, and in clusters. T latter kinds are often substituted,



PIMENTO.

mixed with *P. officinalis*, which is, its name indicates, the only genui pimento. This spice is very stimula ing and strengthening, and also powerful irritant, good for dyspepsi flatulency, gout, hysteria, and toot ache. Chemists often employ it to cov the nasty taste of medicine. T flavour is much less pungent, but mo aromatic, than that of black peppe Importations of pimento have, ho ever, considerably decreased during t

last few years on account of the cheaper spices from the East Indies. The smaller berries are the best. A considerable quantity of red pimento comes from Salonica.

The ground spice is often adulterated with powdered pimento stalks, which may be detected microscopically by the small, thick, one-celled hairs, and by the long, colourless or pale yellow bast fibres. Clove stalks, on the other hand, have no hairs, and their bast fibres are thicker and more deeply coloured.

Powdered cacao shell has also been found.

Pimientos. — The Spanish name for large capsicums. (See p. 703.)

Pindal or **Pindar Nuts.** — See *Ground Nuts.*

This is the *Pea-nut* of the Southern States of America, the negro name in Florida being *Pindar*, while in Virginia and North Carolina it is known as the *Goober.*

Pineapples.—Da. F., G., Sp., and Sw. *Ananas;* Du. *Pijnappel;* H. *Annanas;* It. *Annanasso;* Port. *Ananazes;* R. *Ananass.*

These delicious dessert fruits, *Ananas sativus,* are native to South America; but are now successfully cultivated in most tropical countries, and particularly in Madeira, Canary, Zanzibar, Natal, Singapore, and the Indies, where they also grow wild in most hedgerows. In the Bahamas the pines are regularly raised in fields, and in immense quantities. They thrive best in rich, warm, moist, sandy land, which, after being used four or five years, requires a long rest. Nearly five millions were shipped to the United States in 1897. They are chiefly grown on the islands of Eleuthera, San Salvador, and Long Island; but nearly every island of considerable size possesses soil which is suited to the cultivation of pineapples. The species produced is known as the "Scarlet" or red Spanish, and is of inferior quality. It is, however, a good traveller, and four-fifths of the output of these islands go to the canning factories at Baltimore. The methods of cultivation are shockingly primitive. As many as 20,000 plants are crammed into an acre of more or less rocky ground; and it is only during the last three or four years that chemical fertilisers have been used on these fields. The crop is ready in 18 months to 2 years from time of planting, and the growers obtain 1/- to 1/6 per doz.

When ripe, the apples are cut and carried on the heads of men and women to the nearest beach for shipment in American sailing vessels, from 70,000 to 150,000 apples being shipped in bulk in the schooner's hold; the 10 days' passage to Baltimore plays sad havoc with the quality.

Factories for the canning of pineapples have lately been established in Nassau and in Eleuthera, and in 1897 they shipped more than 20,000 cases of preserved fruit.

Large quantities of pines are also grown in the Haiwaiian Islands for export to the United States and Canada.

A great quantity of cheap wild pineapples are imported fresh into England every year, but these are generally very coarse, fibrous, tough, and indigestible, and, for export to Europe, are gathered before ripe, so as to keep. They are very inferior to the seedless fruit cultivated in English hot-houses, and eaten fully ripe, but, of course, the wild are not one quarter the price. The latter are usually perfection, and, we are told, a pineapple raised at Stackpool Court, Pembrokeshire, in 1821, and served up at the coronation dinner of George IV., weighed over 10½lbs. The pineapple plant, itself 2 to 4 feet high, is a tuft of long, stiff, sharp-pointed leaves, about 12 in number, from the middle of which tuft grows a short stem, bearing a single fruit stalk. It is not, however, a single fruit, botanically speaking, but is rather a *collective fruit,* consisting of the matured spike or head of flowers, all parts of which—flowers, bracts, and axis—are consolidated into one fleshy peduncle, at the top of which complex mass springs a crown of small leaves, which can easily be trained into a new plant.

PINEAPPLES—(continued).

Each plant produces only one of these collective fruits, or "apples," and then dies, leaving behind a number of shoots, which are transplanted so as to keep up and extend the supply. They are planted about two feet apart, say 10,000 to the acre, and when once planted one man can take care of some 20 acres.

Among the best sorts grown are the *Porto Rico*, the *Sugar-loaf*, the *Queen*, the *Trinidad*, and the smooth-leafed *Cayenne*. Some varieties are quite uneatable, being so extremely acid as to excoriate the lips and gums.

The number of pineapples exported from Jamaica alone during 1892 was 10,294 dozens, the larger number going to the United States.

PINEAPPLE.

Pineapple syrup consists of the juice of the fruit, which is sometimes expressed and sealed up in bottles for flavouring ices, etc. It seems to possess the combined flavours of apple, peach, and strawberry, and will keep good a year or two, and in tropical climates is considered a useful medicine in renal diseases.

Canned or Preserved Pineapples.—Large quantities of excellent quality are put up in Bermuda, Nassau, and other West India Islands, Singapore, and a few other places. The process was first carried out at Nassau in 1874. In Singapore pines are almost dirt cheap. During 1896 the export was about 200,000 cases, and they nearly all come to the English market. There are in that island no less than 22 firms, mostly Chinese, preparing and exporting this fruit. They are prepared and canned either whole or sliced. The whole pines are first peeled by Chinamen, wearing india-rubber gloves, partly for cleanliness, and partly to prevent the hands being blistered by the acids of the fruit. Sometimes the inside or core of the pine is taken out by a hollow tin tube, and the fruit then goes into tubs of fresh cold water to be washed. It is then weighed and separated according to size, and placed in tins, previously

cleansed in lukewarm water, and vary in capacity from 2 to 3½ lbs. each.

Whether "*whole*" or "*sliced*," "*corkscrew*" shape, or "*chunks*" (square blocks), or in still smaller cubes or slices, the tin is then filled up with granulated Java sugar and water, or juice from pines not ripe enough for canning. The lid being soldered on, with a small hole left in it, through which air may escape, the full tins are boiled in water for a quarter of an hour, when they are taken out and the holes completely soldered up. They are immediately boiled again for an hour and a half, when the fruit is ready for market, labelled, and guaranteed to keep good for at least five years. Certainly pineapple two years old is superior to the fresh preserved. It has been found they will also keep in perfection without being boiled, but, considering that the acid of pineapples is often so potent when raw as to injure the enamel of the teeth, or the mucous membrane of the mouth, they are probably more safe for general use when in the diluted form. The very powerful proteid digesting principal contained in the ripe pine is also apt to destroy the tin if kept long in stock.

Fresh pineapples of fair quality mostly reach England from the Azores, Madeiras, Canaries, and West Indies, but Africa has also begun to send them, and some excellent pines have already arrived from Natal.

The first to export pines fresh was St. Michaels, in 1867, and these now come packed 5 to 12 in a case, with the green tops carefully protected.

Very few people seem to know how to eat this "king of fruits." It should be noticed that the pine has a fibre running from centre to circumference, and to have it tender it should be nicely pared, and all the eyes cut out, as there is a sharp spear, like a nettle, in each eye or cavity, where the seed forms, and often in eating a pine these minute spears pierce the tongue and lips, and make the mouth sore.

After it is properly pared, then slice the pine vertically; keep twining the apple and slicing off the outside until the core is reached, and then you may eat the fruit without fear of a sore mouth, and it will be also tender, juicy, and luscious, because cut across the fibre.

An excellent quality ("The Sultan Brand") is put up by the Singapore Planting and Packing Co., 66 North Bridge Road, Singapore.

Leading Merchant. — J. Agate, 25 Wellington Street, Covent Garden, London, W.C.

Pineapple Cheese.—A hard yellow make of cheese moulded into the form of a pineapple. Pineapple juice possesses in a remarkable degree the power of curdling milk.

Pineapple Chutney.—See *Chutney*.

Pineapple Essence. — A solution of pure butyricite of ethyl in eight or ten times its weight of alcohol. Although artificial, it well represents the true flavour.

Pineapple Rum.—(See also *Rum*.) —A favourite liquor in some of the West India Islands, and in the United States, and is also the regulation spirit of the British Navy. It is generally rum, flavoured with sliced pineapples during the process of fermentation.

Pine Kernels.—See *Pinone Nuts*.

Pine-tree Soap.— Made by a new process from the resinous matter found in the needles of the pine tree. The resin is extracted by means of alkali, and the woody fibre is removed from the product, which, on the addition of fat, yields an ordinary soap containing resinous and fatty acids.

Pingsuey Teas.— These are green teas, graded in China as Extra Gunpowder (or Pin-heads), No. 1 Gunpowder; No. 2 Gunpowder, No. 3 Gunpowder, No. 1 Imperial, No. 2 Imperial, First Young Hysons, Second Young Hysons.

Pingsueys are generally highly coloured, good style, but of very poor cup quality. Classed with Pingsueys are teas called Cantons, in error. In many cases, the liquor of Pingsueys has a dis-

agreeable and oily flavour, owing to the colouring matter used. The Pingsueys from the Hoochow country are the better liquoring teas.

Pink Pills. — (see also "*Patent Medicines.*")—An examination of these much advertised pills, in 1893, showed them to consist merely of aloes, enclosed in a thin coating of sugar and coloured pink with carmine.

Pinone Nuts (also known as *Pine Kernels*, *Pignolia Nuts*, etc.)—The seeds of the Stone pine, *Pinus pinea*, and are readily separated by roasting the cones. They are about same size as, with a taste resembling, hazel nuts, and are commonly sold in Italy as an article of dessert.

Used largely by confectioners instead of almonds in making cakes and other sweetmeats. They have a much softer and more greasy kernel than almonds, and have a very agreeable flavour, but they are much *cheaper*. Usually imported in 2 cwt. cases, price about 65/- per cwt. (See p. 717.)

In Chili the seeds of *Araucaria imbricata* are considered a great delicacy, both by the Indians and Spaniards. They are sometimes boiled, ground down on a stone into a kind of paste, and made into pastry. One tree will keep a family of a dozen persons a year. *Chilgoza* is a local Indian name for similar seeds obtained from the cones of *Pinus gerardiana*, which form one of the principal articles of subsistence for the natives in Kunawur.

Pipe Clay.— F. *Terre de pipe.*

A fine variety of white tenacious clay, say, 36½ per cent. of alumina with 61½ silica found in natural deposits at Kingsteignton, near Newton Abbot, in South Devon, also in Dorset and Cornwall. Most of it is obtained at Poole and the Isle of Purbeck, where both pipe-clay and potter's-clay are raised to the extent of 80,000 to 100,000 tons per annum. It is largely dug near Corfe Castle, and although it is not known when the Poole clay was first worked, there is an Order in Council as far back as 1666 directing that no dues were to be paid on tobacco-clay at Poole. Pipe clay is distinguished by its perfectly whit colour and its great adhesion to th tongue and lips after it is burnt or baked owing to the large amount of alumin which it contains.

It is easily soluble in water, and ver similar to *kavlin*, but richer in silica Used for making tobacco pipes, queen's ware pottery, and for bleaching; also b soldiers, for whitening their gloves, belts etc. A mixture of this unctuous cla with other saponaceous ingredients is als made into a soap.

Pipes.— See *Tobacco Pipes.*

Pippins. — Pippins or pips ar ordinarily the kernels or seeds of fruit such as apples, pears, melons cucumbers, etc., but the name *Pippins* i also applied to several apples, as Golde Pippins, Kentish Pippins, Lemo Pippins, Newtown Pippins, Normandy Pippins, Ribston Pippins, etc.

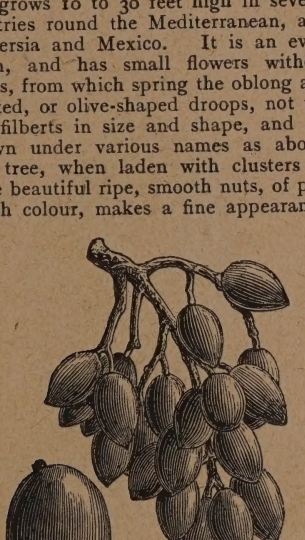
Piquette (pr. Pickett').—A new and cheap "temperance drink" chiefly used by the *bourgeoisie*. It is made by simply adding a copious supply of water to the *marc*, or skins of grapes, apples (fresh o dried), old raisins, currants, figs, dates, or other fruit, with a little sugar, and allowing the whole to ferment. It is then coloured and flavoured to taste, and is claimed to be a better drink than many of the low-priced wines which are often adulterated with harmful substances. In 1897 a law was passed in France interdicting the use of dried raisins and currants in the manufacture of wines, but *piquette* being considered a non-intoxicant is allowed so long as it contains less than 3 per cent. of alcohol, and this evasion of the *Regi* doubtless increases its popularity, for the consumption in Paris alone now exceeds 50 million gallons a year.

The process of manufacture is described as follows: 5lbs of raisins, 5lbs. of dried sliced apples, and 5 gallons of water are placed in an open cask and let stand for three days, after which the liquor is bottled, with half a teaspoonful of sugar and a pinch of cinnamon in each bottle. In France, the beverage thus

produced is sold at a penny a glass. It appears to be a wholesome drink, which might be made in England, from colonial apples, for exportation to the tropics.

Pistachio Nuts (pr. *Pis-tay'-she-o*). —Da. and Sw. *Pistacier;* Du. and F. *Pistaches;* G. *Pistazien;* It. *Pistacchio,* L. *Pistachia;* Pol. *Pistacye;* Port. *Pistacias;* Sp. *Alfonsigos;* W. *Dagrau Adda.* (Also known as Bladder Nuts, Green Almonds, and sometimes spelt *Pistacia* or *Pistaccio.*)

These are the fruit of a kind of turpentine tree, called by botanists *Pistacio vera,* a native of Western Asia, and much cultivated in the Greek Islands. The tree grows 10 to 30 feet high in several countries round the Mediterranean, also in Persia and Mexico. It is an evergreen, and has small flowers without petals, from which spring the oblong and pointed, or olive-shaped droops, not unlike filberts in size and shape, and are known under various names as above. The tree, when laden with clusters of these beautiful ripe, smooth nuts, of pale bluish colour, makes a fine appearance.



PISTACHIO NUTS.

The kernel, of a bright greenish colour, is very pleasant, rich, and oily, and is covered with a yellowish, or reddish outer husk or skin, but which splits into two halves when fully ripe. It loses much of its beauty by drying, but improves in flavour. It closely resembles a sweet almond to the taste, but is sweeter, and forms a green emulsion with water.

Pistachio kernels are mostly used as a dessert fruit, but also in French confectionery and in perfumery. They also yield a wholesome and nutty culinary oil, but it soon goes rancid. Marseilles is a great market for them.

The kernels from Sicily are the cheapest, and Persian the dearest, and usually come in cases of 50 kilos (about 110lbs.) each, the Eastern product being considered to be better than those raised in Europe.

Importers.—Kimpton Brothers, 36 and 37 Mincing Lane, London, E.C.

Pistoles.—(See also *Prunes.*) — The pistole is a small fine flavoured prune of a clear yellow colour, deprived of its stone, and flat and circular in shape. It is cultivated and prepared and dried in the environs of Brignoles, Var Department, France.

Pistoles are rather high in price, but sell well in high-class shops.

Pitch. — Da. *Beg;* Du. *Pek;* F. *Poix, brai;* G. Pech; It. *Pece;* Rus. *Smola gustaja;* Sp. and Port. *Pez;* Sw. *Beck;* Hindoo *Pitch.*

A thick black substance which remains after boiling down the tar of wood or coal until quite dry and all the spirituous part or volatile tarry matter is driven off or extracted. It was originally made from coal in England (1779), and about half a million tons are now produced from the tar obtained in gas-making. In America it is obtained from wood tar and from petroleum.

There are several natural pitch deposits in Venezuela. A pitch lake in the Island of Trinidad has been yielding about £30,000 worth of bituminous pitch yearly. Two kinds of this are shipped, the best, known as *Lake pitch,* is dug from the pitch lake itself, while an inferior kind is obtained from the deposits that lie adjacent to the lake and is called *Land pitch,* of which there are several grades.

Cheese pitches are those which contain

large gas cavities, resembling Swiss cheese. *Iron pitch* is so called from its occurring in hard compact masses almost like refined asphalt. *Cokey pitch* is a kind produced by the carbonisation of land pitch by fires in the scrub that grows near pitch lakes.

Burgundy Pitch.—Impure rosin prepared from the turpentine of the Norway spruce fir (*Picea excelsa*).

Canada Pitch.—Pitch from the hemlock spruce fir (*Tsuga Canadensis*).

Bitumen also often goes by the name of Pitch, Mineral, or Asphaltum.

Pitch always goes quite hard when cold, and some kinds are very tough and dull in colour.

Pitch is often used instead of paint in house and shipbuilding, so as the better to stop the seams and preserve the timber and metal-work. It is also used in making *briquettes* to hold together the coal dust, or "Coke breeze," and in making asphalt, black varnish, and lamp-black, but probably the greatest bulk is used in road-making.

Shepherds and farmers also use it for marking their initials on sheep and other cattle.

Piwarrie.—See *Ouycou.*

Plaice.—F. *Plie.*

This well-known British food-fish is a *flat* species, of the flounder family. It may be distinguished by the uneven shape of its curious head, by its eyes of unequal size being both at one side of its head, by the upper side of its smooth body being always of the same colour as the sand or mud in its vicinity, and on which it rests, its under side being pure white. Plaice vary in size up to 10lbs. each, but the average is only about 1lb.

They are found in abundance at the mouths of rivers and creeks all round the British coasts, at the bottom of the water. They spawn in February and March, and are best for table latter end of May and beginning of June. They may be taken on lines or in trawl nets, and are very tenacious of life and keep well. The flesh is good, and easy of digestion, but more watery than that of the flounder.

One kind is distinguished as *Diamond plaice*, on account of its being studded with a dozen or two of orange red spots. The best plaice are said to be found on the Brown Bank and Well Bank, on the Dutch coast, and between Hastings and Folkestone.

They are usually sold wholesale by the "trunk," or "box."

Plantains and Plantain Meal.—Da., Du., and Sw. *Pisang;* F. *Plantain;* G. *Pisang;* Mal. *Pesang;* Sp. *Platano;* Port. *Plantano.*

The plantain (*Musa sapientum*), sometimes erroneously called *Adam's apple*, is a large coarse species of banana (see p. 73), and there are numerous varieties, upwards of a hundred being cultivated for human food, but some varieties, which produce very luscious fruit, closely resemble the banana, and almost defy discrimination.

PLANTAIN.

Plantains may, however, be generally distinguished from bananas by the purple spots on the fruit stem, by their thick rind and large angular ridges, also by their longer and larger sausage-shaped fruits, which are usually 8 or 9 inches long by one in diameter, and bent a little on one side, while the pulp is often of a red-streaky colour.

The stem in some varieties does not

exceed 6 feet, while in others it grows 15 to 20 feet high, with a cluster of leaves at top, each leaf 4 to 6 feet long by 2 feet broad, and which, when young and tender, are often eaten as vegetables.

Like bananas they are very easily cultivated in all tropical and subtropical regions of the world, and yield extraordinary large crops, the bunches of fruit usually weighing from 30 to 60lbs. each. These bunches are yellow when ripe, and full of a sweet luscious pulp, which is by the natives generally preferred before that of bananas. But as both the plantains and the bananas which are imported into England are always gathered before they are ripe, so as to stand the voyage, they lack much of their natural flavour, and the meal made from such is consequently very insipid and inferior. When, however, the plantain is freshly gathered, and before fully grown, it is commonly baked, boiled, or fried, and is then very nice, and similar to potato, but not quite so nutritious.

Plantains are grown largely in South India, Bombay Presidency, and in Bengal. In Oudh and the North-West here are three varieties grown—a flavourless variety, as large as a good-sized cucumber, and often cooked as a vegetable; a small variety called "Kôkni," or "Chini," and another variety known as "chumpa."

The coarser plantains are only fit for cooking. The rind should be stripped off, and the unripe fruit cooked, and served *hot*, or they become tough and unpalatable. If too ripe, they will be too soft and sweet. The banana, on the contrary, is best eaten fresh, and when fully ripe. The stem of the plant appears to be useless after it has once borne fruit.

The meal is made by drying and pulverising the ripe pulp, and, as a food, is comparable to rice, but contains very little starch. A "Banana Food Company," at New York, has begun to dry or evaporate plantains and bananas, and market them either as dried fruit, as flour or meal, or canned in pulp. These preparations are said to equal wheat in nutritive value, and are likely to become very popular. (See also *Banana Flour*, p. 76.)

A liquor is also made from the fermented juice of this fruit.

Another American in Jamaica has recently built a plant for evaporating plantains. The thoroughly ripe fruit is placed in a heated oven for not more than 48 hours, during which time the sugar crystallises. It takes 6lbs. of fresh plantains to make 1lb. evaporated.

Elder, Dempster and Co., the well-known steam ship owners, of Liverpool, have just received from the Colonial Office a 10-year contract for the establishment of a direct line of fast fruit steamers between England and Jamaica. The steamers to be used at the commencement of the service are to be of 3,000 tons and to be able to carry 40 first-class and 15 second-class passengers. After 1904 they are to be of 5,000 tons, and to be able to carry 100 first-class and 50 second-class passengers. The ports of call are to be Port Antonio and Kingston. The minimum purchase of plantains or bananas is to be 20,000 bunches, and the freight is not to exceed 2s. 6d. per bunch. Elder, Dempster & Co. agree to provide no fewer than six skilled agents, whose special duty it will be to improve the fruit cultivation of Jamaica. The company is to get a subsidy of $200,000, half paid by Jamaica and half by the Imperial Government. The first steamer sailed in January, 1901.

Plaster of Paris.—An anhydrous *Sulphate of Lime*, and in the form of a dry, white, powder made from coarse or impure *gypsum*, a species of alabaster found in Derbyshire and elsewhere, which has been burnt in a kiln, at a temperature of about 350° F., and afterwards finely ground. A little water added to this dry powder, or "*Terra Alba*," as it is often called, quickly causes it to set into a hard mass. Hence its great value in making architectural moulds, picture frames, and in a variety of other operations. To hasten the setting, a tablespoonful of salt may be added to each pint of water used. Unfortunately it is also often used to adulterate edibles, such as flour, sweets.

Plate Paste. — See *Silversmith's Soap.*

Plate Powders. —Used for cleaning and polishing all kinds of gold and silverware, electro-plated articles, jewellery, etc., which would be injured by the use of ordinary *Metal Polishes.* The cleaning of plate is an important operation in a large establishment, as its *durability* and much of its beauty depends on this being properly done.

Mercurial plate powders are destructive to both of these, as mercury not only rapidly corrodes the surface of silver, but renders it soft and in extreme cases even brittle. Prepared chalk of the finest quality is probably the best and safest for silver.

Chamois leather, a plate brush, or very soft woollen rags alone should be used to apply plate polishes, and rubbed very lightly.

For *gold* the form of red oxide of iron known as *Jewellers' Rouge* is perhaps the most useful and appropriate.

Dirty plate, after being cleansed with boiling water, may be restored by boiling it in water, each quart of which should contain a few grains of carbonate of soda, and about an ounce of prepared chalk, calcined hartshorn, or cuttlefish bone, in very fine powder. The ebullition sets up a gentle friction, which is very effective; and the boiled plate is best finished off with a piece of soft leather, or woollen cloth, which has been dipped into the cold mixture of chalk and water, and then dried.

Although mercury with chalk is largely used in the preparation of many plate powders, its employment can scarcely fail ultimately to injure the plate, since the mercury forms an alloy with the silver, and a minute quantity of that metal must necessarily be removed by each friction. It is probably popular with butlers and others, because it gives a brilliant polish, with a minimum expenditure of "elbow grease." The following is a good recipe: — Prepared chalk, 8 parts; jewellers' rouge, 1 part; diatomos, 1 part; dried and powdered hyposulphite of sodium, 2 parts. Mix, and apply with a soft rag and polish with a chamois leather.

Spon's "*Workshop Receipts*" says: "Take an ounce each of cream of tartar, common salt, and alum, and boil in a gallon or more of water. After the plate is taken out and rubbed dry it puts on a beautiful silvery whiteness. Powdered magnesia may be used dry for articles slightly tarnished, but, if very dirty, it must be used first wet and then dry."

Gardner's patent "Rapid" Sifter and Mixer, freely used for above. Prices from 50s. to £100. Catalogues from Wm. Gardner & Sons, Engineers, Gloucester.

Plovers' Eggs.—(See also *Eggs*).—These are, or should be, the eggs of the green plover (*Vanellus cristatus*), also known as the *lapwing*, *peewit*, *peeseweep*, etc. The bird lays about four eggs of an olive cast, spotted with black, in open nests in the hollows or eminences of ploughed fields. They are considered by many unconscionable persons as a great luxury in spring, and always command good prices in fashionable neighbourhoods, particularly the London at Easter.

They are also very popular in France, Holland, and Germany.

In Holland especially the birds nest in greater numbers than in Britain, owing to the swampy ground, as young plovers must drink as soon as they are hatched; and it is asserted that over 800,000 eggs are annually imported into London from Friesland alone between March and June.

Gourmets have, however, for years been eating eggs never laid by plovers and paying fancy prices for them. A large section of the gull family, who are farinaceous rather than fishy in their diet, lay eggs precisely similar to those of the plover. These are collected in hundreds on the small islands in the inland lochs of North Scotland and sent to London. They are ridiculously cheap (to the collectors) and require no dye or flavour to give them artistic verisimilitude, but shopkeepers should beware of purchasing or receiving them.

Plumbago. — Another name for Graphite, from its resemblance to lead. See *Black Lead.*

Plums.—Da. *Blomme;* Du. *Pruim;* F. *Prunes;* Ger. *Pflaume;* It. *Prugna, Susines;* Port. *Ameixas;* Sp. *Ciruelas;* Sw. *Plommons;* W. *Eirinen.*

Plums are supposed to have been originally cultivated from the sloe, wild plum, or blackthorn, which still grows prolificly in English hedgerows, thickets, and open woods.

There are now upwards of 300 varieties of the *Prunus domestica* in ordinary cultivation. Plums are easily propagated by planting the seeds or "pits," by grafting, by layers, or by cuttings of the roots; but the quickest way is by budding.

Plums are the hardiest of English stone fruits, and when ripe are both wholesome and nutritious.

Large quantities are imported every year from Holland, France, Germany, Bosnia, Servia, etc., fresh as well as dried.

In Normandy, the growers wisely pack them in small boxes of 6, 9 or 12lbs., so that a consumer can buy a box and take it home without disturbing the fruit. There were 413,000 bushels imported from the Continent in 1892, and nearly double this quantity in 1893. In 1895 the value exceeded £250,000, and in 1896 the imports were 540,246 bushels, value £241,782.

The best of English growths are the Greengages, supposed to be native of Greece, the *Magnum Bonum,* which are (as their name implies) a large-sized variety of the *Aubertiana,* and of white colour; then come *Rivers' Early Prolific,* the *Czar, Pond's Seedling, Victoria, Monarch,* etc.

Orleans Plums, originally from France, are among the inferior kinds, and only used in jams and cookery.

Australian Plums are a sort of persimmon, or date plum, and better known as the black plums of Illawarra.

Chickasaw Plums are a globular thin-skinned variety, of red or yellow colour, native of the southern Rocky Mountains, not very hardy, but cultivated throughout the United States. The *Pottawattamie* variety is more hardy, and is one of the best American plums.

French Plums.—A name given to a superior species of plum grown in the valley of the Garonne and generally dried and made into prunes. The best are the large black ones brought from Bordeaux. (See *Prunes.*)

Servian Dried Plums, or Prunes, are gathered, dried, and prepared under Government supervision, and are largely exported from Schabatz, Belgrade, or Obrenovatz. There is also at Kragoujevatz a factory making about 500 tons of plum marmalade annually.

For Japan plums, see *Loquats;* and for Damask or Damson plums, see *Damsons.*

Plums for bottling or for jam should be gathered before fully ripe. They will keep fresh a long time in "cold storage," a little above freezing point, but never below it, or deterioration ensues.

For evaporating or drying, the thick-skinned varieties are needed, and should be submitted to an even temperature; the drying should be done at three times, between each of which the fruit should be allowed to become cold.

(See also *Carlsbad, Bosnian, Greengage, Mirabelle,* and *Porcal Plums.*)

All plums are acid, and likely to disagree with the eater unless quite ripe, but all are wholesome when cooked.

In Poland, Hungary, Germany, Switzerland, and the Vosges, an alcoholic liquor is made from plums, by distillation, and extensively used in these countries.

A "Carton" of plums is 9lbs.

Plum Jam. — The best article is made from plums not fully ripe and sugar only, but if the fruit is ripe, and the season dry, it is desirable to add a little water, say 1 or 2 pints to each 24lbs. of fruit. The added water is really to start the boiling, and cannot be termed an adulteration as it all boils out again in steam. A loss of 5lbs. in boiling 28lbs. (plums and sugar) is about the average. Some manufacturers mix 60lbs. fruit, 60lbs. of sugar, with 10lbs. of apple juice, and 7lbs. of glucose. They say the glucose is to kill the grain of the sugar and to preserve the jam, and the apple juice to freshen it, but both are generally considered adulterations.

The stone-fruit crops in England being very uncertain, the greater part of these jams are made from foreign fruit, mainly from France, Holland, and Germany, and although the imported plums are not nearly of such fine flavour, nor possess the jelly-like body of our English growths, such as the Orleans, Victorias, and other well-known varieties, still they are very good for the purpose, and produce a sound, good-flavoured and profitable jam. Some kinds of plums when ripe require very little or no addition of sugar.

The boiler of jams has, however, to consider this, also whether he is dealing with home or foreign fruit, the latter requiring no addition of water.

Plum Puddings.—These have long become English institutions, and seem to bind the whole race into one festive family at Christmas-time.

There is now an increasing export trade in them to all parts of the world, especially to the British Colonies. It is never worth a housekeeper's while making plum pudding in small quantities, and where there are only two or three persons these factory-made puddings in earthenware, glass, or tin, are very useful, and especially to housekeepers who are liable to receive unexpected visitors. Brandy sauce is a very popular accompaniment, but is much better for the purpose when mixed with rum.

Plymouth Gin.—A syrupy sort, closely resembling *Hollands* (which see).

Pod Pepper.—See *Bird Pepper*.

Poires Tapees.—See *Pears*.

Poisons Act.—See *Drugs* and *Patent Medicines*.

Poivrette.—A powdery preparation, of considerable notoriety a few years ago, for the adulteration of ground white pepper. It was detected in 1888 by Dr. Campbell Brown (Liverpool), and consisted mainly of ground olive stones.

Polenta.—F. *Polente*.

A very stiff sort of porridge, long popular as the food of high and low throughout Italy. It was originally made of coarse barley and horse-chestnut meals, soaked in water, and then fried in oil or butter; but it is now generally prepared from the yellow Indian or maize meal, coarsely crushed, and is much the same thing as American "*Mush*." Half-a-pound of the meal is boiled in about a quart of water to the consistency of thick gruel. When this is poured out about half-an-inch thick, it cools and stiffens, and is afterwards cut out into finger-like strips, which are then fried with cheese, oil, or fat, and eaten hot, either alone or with other meats, small birds, etc.

The name "polenta" is commonly applied to this kind of food whether made of maize meal, horse-chestnut meal, barley meal, or wheat meal.

Polishes.—For Blacking see p. 116; Boot powders, p. 124; Brass Polish, p. 134; Brown Boot Polish, p. 147; Plate Powder, p. 728; Liquid Boot Polish, p. 543; Metal Polish, p. 594; also, Russet-Brown Polish, Stove Polish, White Shoe Dressing, etc.

Polishing Soap.—A good polishing soap may be made by mixing 100 parts of cocoanut-oil soap (in sufficient water to make it fluid) with 10 parts of tripoli, 5 parts of alum, 5 parts of cream of tartar, and 5 parts of dry white lead. These should be pulverised together, and cast into cakes.

Special Firm: Punch Polish Co., Hick Street, Birmingham. F. Cooke (Proprietor).

Pollards, Sharps, or Thirds.—These consist of the finer parts of the skins off the grain of wheat, which are separated from the corn in the process of grinding. The name varies in different localities. The larger and coarser portion being called the *bran*.

Polonies.—(See also *Bologna Sausages*, *Saveloys*, *Mortadella*, etc.).—Generally made of both fat and lean pork.

The meat is in the form of a dry paste, and closely resembles Bologna sausage.

Sheffield is more celebrated for these cooked sausages than any other town in England.

Polpettes.—Popular Roman delicacies, consisting of the loin of the pig, salted, scraped, and smoked in a bladder.

A name for the marc or refuse remaining after pressing the oil or juice out of olives, apples, or other fruits.

Pomard Wine.—A celebrated red kind produced in the small commune of that name in France, about three miles from Beaune. It is classed among the second qualities, of *Cote d'Or*.

Pomatum.—F. *Pommade*.

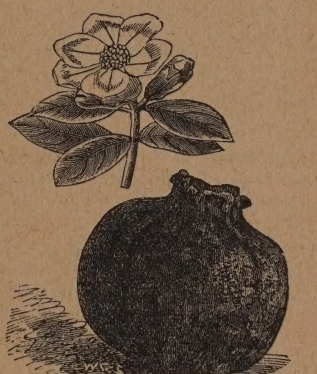
This name was originally applied to a fragrant ointment, prepared with lard and apples, but is now wholly confined to solid greasy substances used in dressing the hair.

Fresh lard, tallow, wax, spermaceti, castor oil, vaseline, coker-nut oil, and almond oil are now generally used, and these are often coloured with carmine, alkanet, saffron, cinnabar or ochre, and merely perfumed with essential oils. The best French pomades are soft ointments having a basis of lard or fat, and scented with flowers. The lard is covered with sweet-smelling flowers, which leave their perfume in the lard, and by similar repetitions with fresh flowers the lard eventually becomes sufficiently scented. It is then called pomatum, or pomade, as sold in the shops; but it is also now commonly made by melting and stirring together, with a little perfume, three parts of vaseline or petroleum jelly, and one part of paraffin wax.

Pombe or **Millet Beer.**—See *Millet*.

Pomegranates.—F. *Grenades*; Ger. *Granatapfeln*; Ind. *Anan*; It. *Granati, melagrane*; Rus. *Granat*; Sp. *Granadas*; Sw. *Granatäple*; Hin. *Darim*; Mal. *Dalema*; Port. *Roman*; W. *Grawn Afalau*.

Pomegranates are the orange-like fruits of the *Punica granatum*. The name comes from the Latin *Pomum* (apple) and *Granatium* (many seeded). The tree is a native of Persia, where it forms extensive woods, but is now cultivated in Italy, Spain, Portugal, and France, and in most of the warmer parts of Europe. The fruits from the East are highly esteemed, and considered much superior to those from the South of Europe. The trees are deciduous, and grow 15 or 20 feet high, with thin, thorny branches, green, shiny leaves, and large, rich crimson flowers, single and double, at the end of the branches. It is often grown in English greenhouses, and even in the open air as an ornament, but only bears flowers.



POMEGRANATE AND FLOWER.

The fruit itself, used both as a medicinal and dessert fruit, is, when full grown, about the size of a poppy head, with a hard, light brown, coriaceous or leathery rind; when ripe and fresh it is of a beautiful yellow colour, with a rosy tinge on the sunny side. In form it will be noticed to have six rounded angles. Stripped of its hard, corky bark, and the interior mild astringent rind, it is found to be composed of two tiers of small, pulpy, seedy granules, or carpels, each about the size and shape of a grain of maize (or flat-sided pea), and arranged in irregular, angular rows. These reddish pulpy grains (very like so many red currants packed close together), which form the edible part of

the fruit, have a pleasant, sweetish, subacid flavour, and are often used in preparing cooling drinks, syrups, and liqueurs.

In England they are mostly eaten by Jews during their autumn religious festivals, especially at their Feast of the Tabernacles. In Persia wine is made from them, and in Mexico and other parts of South America, where they grow in great perfection, a spirit known as *Aguardiente.*

Pomegranates mostly reach this country from Portugal and Spain, and sometimes from Barbary.

They have been cultivated in Spain from time immemorial, and about 10 million kilos are exported yearly, chiefly from Almeria, Murcia, Orihuela, Valencia, Castellon, and Tortosa.

Pomelions or **Pomeloes.** — See *Forbidden Fruit.*

Pomeranzen or **Pomeranzen-Wasser.** — A popular beverage in Northern Germany, resembling our orangeade.

Pomfret Goods (Cakes, Pipes, Lozenges, etc.).—Pontefract, in Yorkshire, is now better known for these goods than for anything else, and is the centre of the English liquorice industry.

Pomfret goods are not usually made of the purest refined liquorice juice, which of itself is not very palatable, but toned down with sugar it becomes very agreeable. These manufactures are, however, generally heavily adulterated with farina, wax, suet, etc., and colouring matter. There is a considerable amount of liquorice root grown around Pontefract, but the bulk of the juice used comes from Spain, Italy, and Smyrna. (See *Liquorice.*)

This is first boiled and certain impurities skimmed off; then sugar and other materials are added, and the whole thoroughly mixed. When cool, the paste is ready for manipulation into endless cheap fancy shapes, such as lozenges, boot laces, animals, musical instruments, etc.; but it is to be regretted that the manufacturers do not give more attention to supplying the demand for pure liquorice juice.

When Pomfret cakes, sticks, or Spanish juice have got old or dull, a little liquid gum-arabic rubbed over them will restore their gloss; a little sweet-oil will do, but it is not so nice. Keep the goods moving or separate until dry, or they will all stick together.

Pommel. — The name under which the original double Swiss cream cheese is sold.

Pond's Extract or **Hazelena.**—An aromatic water distilled from the leaves of *Hamamelis Virginica*, or winter bloom. Considered a very useful application for bruises, wounds, mucous discharges, piles, etc.

Pone Bread. — See *Maize Bread.*

Pontac Ketchup.—Made by boiling, for about five minutes, 1 pint each of elderberry juice and strong vinegar with ½lb. of anchovies, and flavoured with shalots, spices, etc. When cool, it is strained and bottled.

Pontac Wine.—A dark red kind of Constantia wine, made either sweet or dry, in Cape Colony, from Pontac grapes. It is of a somewhat rough character, and rather heavily loaded with tannin, which gives it an astringent and peculiar flavour, but it is very popular in the district where it is produced.

At Constantia it is never made till the grape has so far shrivelled up that it contains very little juice. This, therefore, is usually supplied by the addition of red Muscadel, or, for an inferior quality, the juice of the green grape is used.

Pont l'Eveque Cheese. —A soft or semi-hard kind of cheese, and of much the same character as Neufchâtel cheese. It takes its name from the town of Pont l'Evêque, in Calvados, Normandy, in which district it is produced. About £100,000 worth is made yearly. It is square in shape, and the body of the cheese, when ripe, is soft and yielding, the ripening being brought about by aerolic ferments.

Pontefract Cakes, etc.—See *Pomfret Goods.*

Poor Man's Friend (Dr. Roberts's). —An examination of this has failed to discover anything beyond a simple ointment of nitric oxide of mercury.

Pop-Corn. —A term of American origin, applied to the fluffy, twisted, and snowy grains of roasted maize, or Indian corn. After a sharp roasting the corns become so hot that the oil inside the kernels turns to gas. This gas cannot escape through the hull of the kernel, but when the internal pressure gets strong enough it bursts the grain, and the explosion is so violent that it shatters it into very curious shapes, literally turning it inside out.

This encrusted corn, which looks well to the eye, has a nice smell and flavour, and is a worthy favourite with children. It is sold both loose and made up into halfpenny balls, red or white, the light, chaffy fragments of corn being stuck together and rolled up with white of egg or other adhesive, and being almost as light as a feather, a lot of it weighs very little. (See *Corn Balls.*)

It is best to make it from the finest Indian corn, known as *Nonpareil*, a small, eight-rowed variety. Shake the corn in a wire shovel or "popping sieve" over heat (either a spirit lamp, or gas, or a coke furnace will do), when in a short time the corns will crack or "pop," and turn themselves inside out. A little sugar is then melted and stirred into the popped corn in a pan over the fire. If pink colour is desired, colour the melted sugar with a little carmine; or if wanted yellow, colour the syrup with vegetable yellow.

Some think pop-corn is improved if flavouring is added to the syrup—*rose* for the pink, *vanilla* for the white, and *oil of lemon* for the yellow. On its removal from the pan it is ready for sale, and should be consumed while fresh.

Poppodums. —An Indian relish, prepared in Bombay from Dhâll, for use with curries, etc., or may be put on a grill or toast before the fire.

Poppy-seed Oil.—See *Maw Seed.*

Porcal Plums.—The name of a large-sized variety grown in Spain.

Pork.—F. *Porc;* G. *Schweinefleisch;* Port. *Carne de porco;* Sp. *Carne de cerdo.* (See also *Pickled Pork, Bacon, Bath Chaps, Brawn, Hams, Lard, Pigs, Sausages, Swine,* etc.)

A pig for its size is one of the most useful of animals, inasmuch as he is good from top to toe, and there is no part of him which is not turned to account.

Pork is the fresh or uncured flesh of any newly-slaughtered pig, but more especially that of the younger and smaller animals which have been fed for the purpose of being eaten fresh. The skin should be thin and smooth; if thick, the pig was old. It is best during the winter months, after it has hung a day or two, but not more; if cooked too fresh such pork will be hard. Pork should always be well roasted; if underdone it is very indigestible. The heart, fry, liver, and kidneys are best if cooked while quite fresh.

The modes of cutting up, curing, and using the several joints vary, of course, in different countries and districts, but the general way of proceeding in England is—after the animal is killed, scalded, and scraped—to hang it up by the hind legs, open it, and remove the intestines, liver, and kidneys. The carcase is then well rinsed inside and out, and left for a few hours to dry in a cool place.

When firm and stiff, the cutting-up is begun by removing the inside fat, and severing the head and feet; then, with knife and chopper, and while the carcase is still hanging, take out the spine, backbone, or "chine," by cutting and chopping neatly through the ribs, about one inch from each side of the spine, from tail to neck. This long strip, or "chine," should be wedge-shaped its whole length—viz., about 4 inches thick on the inner or bony side, and about 1½ inches thick on the outer or skinny side. The sides are now laid on a strong table, and the *ham* is carefully carved from each side. (See also *Tinned Ham.*)

American Pork.—The hog sides, as cut in Chicago, are for either "short

PORK—(continued).

ribs" or "mess pork," and the percentage yield is about as follows:—

Short rib.		Mess pork.	
Shoulder ...	10	Shoulder	10
Ham	11	Ham	11
Lard (rendered) ...	15	Lard (rendered)	15
Short rib...	39	Mess pork ...	40·5
	75		76·5

In addition to the above, the following products are secured:—

Tender loin, about 1lb. per hog.
Tongue, „ 1lb. „
Lean trimmings, „ 1½lb. „
Heart, 0·25 per cent. of live weight.
Feet, 1·56 „ „ „
Cheeks (removed from bone), 0·20 „

The yield of the several parts of the hog depends not merely upon the weight, but upon breed, health, age, etc. American pork, being maize-fed, loses 50 per cent. in cooking, while English and Irish lose only 25 to 30 per cent. American pork readily assumes the baconian state after being washed and dried by the retail provision dealer. Pork, as an article of food, is theoretically banished from the tables of one-half the housekeepers of our cities and large towns on account of its indigestibility.

Chilled Pork.—The experiment of sending over American chilled mutton has not been attended with success. The American breeds of sheep bear no comparison with the English flocks, and, therefore, the attempt to popularise the importation of chilled mutton failed. Better results, however, have been achieved in respect to pork. It was first introduced into Birmingham in September of 1896. The supply of English pork, owing to the prevalence of swine fever, had become somewhat limited, and, in order to meet the existing demand, the American exporters added consignments of chilled pork to those of beef. The pigs found to be the most marketable are the produce of Berkshire boars and American sows. The animals are bred in various States and sent to Chicago, where they are killed. Some of the carcases are wrapped in cloths and packed in cases for transportation in an uncut state, but, as a rule, the pigs are quartered. The legs, loins, shoulders, and spare-ribs are separately dealt with, and shipped in the cold stores, the meat arriving in England in prime condition for the table. The first shipment to Birmingham was ten cases of loins, each case containing four loins averaging about 10lbs. each. The meat was soon disposed of, and in the course of a few weeks other cuts were forwarded, and were purchased freely by the butchers. The season, which commenced with a consignment of ten cases and closed with one of a hundred cases, was an experimental success. Since then it has developed enormously, and is appreciated both by the retailers and the public. The loins come packed in 50lb. cases, shoulders about 100lbs., spare ribs 60lbs., and legs 120lbs. Chilled pork has the merit of being slightly cheaper than English. In the wholesale market, the loins realise 5d. to 5¾d. per lb., the legs 5d. to 5¼d., the shoulders 3½d. to 4d., and the spare-ribs (which are peculiarly adapted for pork pies) 4d. to 4½d. per lb.; while the retail price of legs and loins is 7d. to 8d. per lb., and shoulders 4d. to 5d. per lb.

If kernels be seen in fat pork, they are a sign that the animal was diseased when killed. Pigs that are allowed to devour all kinds of offal, putrid and otherwise, are liable to become infested by a repulsive and dangerous parasite, generally known as the *Trichina spiralis*. It is always found in the muscular fibres, and not in the substance of the flesh, as in the case of the *Cysticurai*. Its nest, or cell, is in the form of a minute white speck, which, although it is barely visible to the naked eye, sometimes contains a couple of specimens; whilst the worm itself, being as fine as a hair, can only be detected by the use of a most powerful microscope, a single ounce of flesh being capable of containing from 60,000 to 80,000 of them. It

multiplies very rapidly, and in a couple of days or so after passing into the intestines of either animals or human beings commences to bore its way into the muscles, causing the greatest agony. It appears to have been discovered about a century ago, but does not appear to have been regarded as any way dangerous until about 1861, when some considerable excitement was caused by several persons dying in great agony through having eaten pork that was infested with it. The climax was, however, reached in 1863, when over 30 persons in a small town in Prussia died through having partaken of smoked sausage meat which had been made from the flesh of a diseased pig, whose carcase swarmed with this deadly worm. It lives and continues to thrive in the flesh after the animal has been slaughtered. Neither salting, drying, nor smoking appears to have any effect on it. The only method by which it can be considered as thoroughly destroyed is to expose it to a temperature of not less than 170° F. Pigs that are properly fed and attended to are generally free from it. The tongues of animals infested with Trichina are ofttimes inflamed and very much swollen.

Pork Pies, Meat Pies, etc.—F. *Pâtés de porc;* G. *Schweinefleisch Pastelen.*

Pork pies, veal and ham pies, lunch pies, "Melton Mowbray," and other meat pies, have a large and profitable sale all the year round.

Those prepared by large firms, who have their names and reputations to keep up, are the most reliable, and they are certainly more widely known and trusted than those prepared by small local makers, however superior the latter may, in some cases, be.

To make these raised pies to stand while baking, the lard, butter, and beef suet should be boiled—one-third the proportion of the last two to the lard—with the water, pouring the whole boiling into the flour. The raising should then begin at once, but to do this is not easy to inexperienced hands.

The paste may be kneaded, rolled, and raised by hand, also the ornaments, and this is still customary with small makers; other makers use wooden moulds, according to size of pie required. The mould is placed upside down, and the paste is laid on the bottom, and then worked down over the edge of the mould. The work is more quickly done with the mould, and there is less risk of thin, uneven places; indeed, large pies are still best made in this way; but for forming the 1d., 2d., 3d., 4d., 6d., and 1/- sizes, brass moulds of the exact size and shape, and stamping machines are now used in all large factories, and the business is very easy. The meat, half fat and half lean, also is minced or cut into tiny cubes, about the size of peas, by one machine, the paste and ornaments rolled out by another. The pie is then stamped out in the metal moulds, filled with seasoned meat, and capped ready for the oven. The latter is usually heated by gas or coke, and the pies are baked in half an hour to an hour, according to their size. When taken out of the oven, the pies are painted over with egg flip or other gummy substitute, and cooled in racks. Sometimes a hole is made with a wooden skewer, and "stock" made by boiling and filtering rind, bones, etc., is poured in. This, seasoned with pepper, salt, and a little preservative in the shape of salicylic acid, borax, or formalin, forms the jelly. Recipe:—12lbs. Hungarian flour, 20lbs. cornflour, 5 to 6 lbs. melted lard, 1 pint boiling water, ¼lb. medium baking powder, and about 2 ozs. salt, will form a suitable dough for a gross of 2d. pies.

The pastry, instead of being light and flaky like that made for tarts, cakes, and fruit pies, is made firm, short, and rich. The crust is supposed to surround the meat, and, by keeping out the air, preserve the contents several days, and for this reason several makers now add the gravy and jelly powder while baking instead of making a hole in the lid afterwards.

These raised pies should be entirely free from bone and gristle. If *clammy*, it shows that the pork has gone bad;

and both these and mouldy pies should be at once destroyed. Great care is necessary to sell meat pies before this mould or decomposition sets in.

In order to supply their pies fresh to shopkeepers, the best makers keep no stock of pies on hand, but set about making and dispatching each day's requirements, only on receipt of their customers' orders.

The bad meat of the cheap pies made and sold in some shops by unprincipled persons, and also by itinerant vendors, is often masked by high seasoning.

Special Firms.—Hillier's Bacon Curing Co., Ltd., Newmarket, near Stroud; Tebbutt & Co., The Works, Melton Mowbray.

Porpoise Oil. — See *Clock* or *Watch Oil.*

Port du Salut Cheese. — A semi-hard make of French cheese, made in the west of France by the monks of La Trappe, at Entrammes, near Laval. This celebrated cheese is subjected to only very slight pressure. It is very easily made, and ripens in about six weeks, resembling a Gruyère in taste, but is softer, milder, and much smaller, being only about one foot in diameter. A large figure describing the origin is printed on the rind.

Port Wine takes its name from Oporto, in Portugal, the chief port from which this wine is shipped. It is a fine dark-red or purplish product of the Upper and Lower Douro, at the North of Portugal, but, being a mixture and not a natural production of the grape, it is really more of a cordial than a wine.

After the juice has been pressed out of the grapes, and while the fermentation is going on, a certain quantity of grape or other spirit is added, so as to impede the process and to retain some of the saccharine matter as well as the flavour of the grapes, and by that means a wine of sweeter character and of fuller body than French wine is produced.

When new and genuine—which is rare—it is rough, strong, and rather sweet to the taste; but with age, in bottle, it becomes tawny, losing its astringency and becoming a rich and strength-giving stimulant. It usually contains about 25 per cent. of proof spirit, and its effect is rather stupefying than exhilarating.

Port should never be *very* sweet. A dry wine is full in flavour, but not abounding in sweetness, while a full-bodied wine is generally newly made.

Port was for at least 150 years a favourite after-dinner wine in England, but is not so popular now as it was 50 years ago. In cases of feebleness it is, however, widely recommended by doctors, but it does not suit gouty, bilious, or dyspeptic constitutions, and is, in fact, accredited with producing them.

The vine which yields genuine port wine was originally taken from Burgundy, but the transplantation has had so wonderful an effect on it that scarcely anything can be more distinct from the wines of Burgundy than those of Oporto.

The port wine vintage begins in September and October, and the yield is about 70,000 pipes of 115 gallons each. The first liquor drawn from the wine press is produced by the weight of the grapes alone, and is often called *Lachryma Christi.* Afterwards a gang of men jump into the press and dance to the sound of the fife or bagpipe, but the method is not a pleasant one for port wine drinkers to witness.

Port wine loses much of its colour and flavour if kept too long in cask, and it is too often prepared more or less artificially; in fact, it is blended, sweetened, coloured, fortified, or doctored more than any other wine in the trade.

Potato spirit is largely added to simulate an age the wine does not possess, some ports containing up to 38 per cent. of spirit, and a liberal use is made of alkanet root, or a special colouring mixture known as "Jeropiga," which is prepared from elderberries, treacle, raisin juice, and spirit. The red Spanish wines, about half the price of port, and known as Tarragona and Catalan, often form the base of rich tawny ports, so-called, and it is a common practice to dip or dye the corks of the bottles in elderberry syrup, to give appearance of richness and age.

If the wine be pure, unfortified and

guiltless of either sloe, bilberry, or elderberry, a wine-glass of it poured gently on the top of half a tumbler of cold water will float for some few minutes.

It is a good criterion of sound port if on drawing the cork its under surface, when dried, presents small crystals of tartar. In decanting old port, always keep the chalk mark uppermost, and use cambric in the strainer, so as to check the "bee's wing," or second crust, which only comes some time after the first has formed. It is tarter and freer from astringent matter than that deposited from the first crust.

In bottling and packing port so as to secure a quick coat or crust, a good layer of sawdust should be laid at the bottom of the bin, and when the wine has been arranged on this, it should be well watered with a small watering can. The same with the second and all additional tiers. Port packed in this way will have as good a coat or crust in a few months as if bottled for five or six years.

The sediment usually seen in old bottles of port consists of bitartrate of potash (cream of tartar), which being slightly soluble in wine, gradually settles and forms what is known as "crust." This crust must not, on any account, be allowed to pass into the decanter. It is also desirable for the decanter to be quite as warm as the wine that enters it.

The finest *white ports* are Lachryma Christi, Dedo de Dama, Muscatel de Jesus, Ferral Branco, Malvazia (or Malmsey), Abelhal, Agudeho Alvaraca, Donzellin Folgozao, Gonveio, White Mourisca, Rabo de Ovelho, and Promissao.

The best *black port* is Touriga, and the sweetest Bastardo. Other dark kinds are Souzao, Aragonez, Pegua, etc., etc.

Barley as a base for port wine is, according to H.M.'s Consul at Naples, a recent but practical discovery. "The barley is first malted, then the bacilla of port wine are introduced into the mead, where they fecundate incontinently and transform it from immature beer into the richest port.

"When the animalculæ have done their work they can be sterilised, a sufficient number of microbes being preserved in the laboratory for further use." (See *Barley Wine.*)

Southampton Port is a term for the light unbrandied port, which merchants in Southampton have long been in the habit of importing, and this kind is much more popular in Ireland than the strong and heavy port wine generally consumed in England.

British Port (see *British Wines*) is chiefly made of damson juice and other ingredients, fortified with a little spirit.

Port Wine Negus.—See *Negus.*

Porter, etc.—Port. *Cerveja preta.* (See also *Ale*, *Stout*, and *Beers.*)

Porter is a dark brown beverage, made from high-dried or charred malt, and owes its name to its having long been a favourite drink with *porters*, labourers, and the lower classes generally—an honour it still retains in London. It was first introduced by a brewer named Harwood in 1730, and was first retailed at the "Blue Last," in Curtain Road, Shoreditch. At that time it was called "Entire," or "Entire butt," because drawn entirely from one cask.

Before porter or "entire" came into use, liquors called *Half-and-Half* and *Three-threads* were made, by mixing together two or three different qualities of ale, beer, and "two-penny," and it was necessary, when a tankard of three-thirds, "three threes," or "three threads," was demanded, for the drawer to go to three different casks for it.

Mr. Harwood's genius enabled him to brew a capital imitation of the "three threes." It became popular at once, and afterwards got its name of *porter.*

The word "entire" is still commonly used, and painted on the signboards of taverns about London.

The dark colour and bitter flavour of porter is simply owing to the roasted or charred malt—often aided, however, by burnt sugar and quassia or assamar, the dark colour and strong taste rendering it easier of adulteration than ale. In brewing the best porter, top-fermentation in large tuns, lasting 48 to 60 hours, is

followed by after-fermentation in the smaller casks, lasting several days. The latter clarifies it, and the air is at last excluded by bunging the casks.

It used to be the custom to vat the liquor, and store it some length of time before use, but during the last 30 years the public taste has grown in favour of new porter, and it is now often kept only a week or two. The old acid flavour is not liked now.

Much of the cheap beer or porter is merely a weak mild ale, coloured and flavoured with "patent" or roasted malt, or roasted quassia chips, besides being adulterated with coculus indicus, sugar, water, treacle, salt, *sulphate of iron*, etc., and is incapable of undergoing vinous fermentation.

The best porter is usually brewed in very large establishments, and it seems doubtful whether small brewers can produce it so well. It used to be fancied that really good porter could not be made anywhere except in London, but Dublin porter has come very much into favour of late years.

Stout.—To turn a butt of porter into stout insert four gallons of molasses, with a quart of finings, tapping first in the middle of the butt.

"*Cooper*" is a popular London term for a mixture of equal quantities of London porter and Dublin stout.

Porter Extract.—A combination of sulphate of iron, foots-sugar, liquorice, salt, and other refuse, for mixing with weak porter and stout to produce a kind of metallic smartness.

Portland Cement.—So called from its resemblance to Portland stone. The raw materials are chalk or limestone, and clay, both found very pure and abundantly in the valley of the Medway, and although the processes of manufacture are very crude, and much the same as adopted two hundred years ago, most of the cements are of satisfactory quality. The clay is first mixed with the chalk, then undergoes a process of burning, and is finally ground to powder.

There are nearly ten million barrels made yearly in England alone. The first factory was established at Northfleet, and Portland cement soon superseded every other brand all over the world, but it is made now in several parts of Europe, and even in the United States—altogether some twenty million barrels a year. Geneva, or French "Portland Cement" is said to be firmer, as a rule, than the English, but Belgian is the best of all.

German "Portland Cement" is of excellent quality, and, apparently through the exercise of greater care and skill, is practically superior to the English. The members of the German Portland Cement Makers bound themselves, in 1888, to "place on the market under the designation of 'Portland cement' only one kind of commodity, which shall be made by burning to a frit an intimate mixture of materials, containing only lime and clay as their essential constituents, and grinding the product to the fineness of meal. Any other shall be held to be a deception practised on the buyer." There are now about 63 cement works in the whole of Germany, the Rhine being the principal centre of the industry, but there are three or four in the neighbourhood of Hamburg.

Belgian Cements.—A large quantity of the best "Portland Cement" (slow setting), as well as Roman Cement (quick setting), is produced in the calcareous district of Tournay, in Belgium. A cheap Roman Cement is also produced in the same district, at about half the price, being usually made from refuse stone. It has a natural light yellow colour, but cinders are often added, changing it to a greyish colour resembling Portland cement. The Belgian syndicate do not, however, recognise this Roman cement, nor allow their trade mark (a hammer) to be placed on it.

The best known Belgian brands are "the hammer," "rhinoceros," "trowel," "sword," etc.

Artificial Portland Cements.—Several cements are made by burning natural argillaceous limestone, containing varying proportions of clay and carbonate of lime, and some manufacturers profess to rectify the composition after burning by adding limestone, slag, etc. These artificial cements may resemble in chemical constitution Portland cement, without

possessing its properties, on account of the constituent elements not having been forced into combination by calcination and semi-fusion of the mass.

The best tests for good cement are:—(1) Regularity of composition, (2) fineness of grain, (3) gravimetric weight, (4) specific gravity, (5) time of setting, (6) resistance to tensile, compressing or shearing strains and cohesive strength, either when pure or mixed with sand, (7) uniformity of volume or expansion, (8) resistance to frictional wear, (9) expansion, (10) impermeability, etc.

Cements should always be stored in a dry place, and preserved from the air as much as possible.

Portuguese Wines. — (See also *Madeira Wines.*)—The vine is cultivated in Portugal in four ways:—

(1) By training it round oak and poplar trees; (2) by bushes, in rows, so that the intermediate ground may be ploughed; (3) by the trellis system; (4) by the terrace system. It is customary to plant 2,500 vines to the acre, and the yield is often 240 gallons per acre, or a gallon from ten vines. The largest vine in the world is one growing at Oys. It has been in bearing since 1102, and sometimes yields grapes sufficient for 150 gallons of wine.

The development in the export of Oporto wines during the last fifty years is very remarkable. In 1842 it was only 27,431 pipes; 1862, 29,710 pipes; 1872, 50,182 pipes; 1882, 59,327 pipes; and in 1892 it was 114,659 pipes (of 500 litres each).

The annual crops now vary from 50 to 55 million litres. Brazil takes about half of it, and the United Kingdom about one-third. Of some 28 million litres of "Port" exported, the U.K. receives about 18 million, and Brazil only about 4 million.

The chief wine district is the "Alto Douro," and the town of Peso da Ragoa may be called the wine capital, where annual fairs are held for the sale of wines. In 1703, when an angry feeling existed between England and France, a commercial treaty was made between England and Portugal. This gave the wines of Portugal a decided advantage in the English markets, and from that period to the present the use of "*Port*" wine has been adopted almost as the orthodox after-dinner wine of this country.

The other kinds best known are *Alvarilhao* (a sort of claret), *Calcavella*, *Alicante*, *Muscatel*, *Roxo*, *Malvazia*, and *Vermelha*. *Lavradio*, *Laniego* are red sorts. Of *Collares*, there are both white and red. *Chamusca*, *Barra*, *Termo*, *Bucellas*, are all white. *Catalan* or *Spanish Red* is from Tarragona. *Arinto* (white) and *Estramadura* are both comparatively new wines. *Covnifesto* is a peculiar red variety. *Arèas Braganca*, *Moraes*, *Moucorva*, and *Nosedo* are white wines, and considered of excellent quality. *Charneco* is produced at the village of that name. *Lisbon* wines are of two sorts, dry and sweet; they are both white. *Palmella* and *Inglezhinos* are wines both grown near Lisbon, but they are not exported under their own names. *Torres Vedras* and *Moncaon* are both red. *Setuval* (two varieties), one sweet muscat, the other dry (both white).

Apply to M. & W. Jones, Villa Nova de Gaya, Portugal.

Porwongs, or Arctic Berries.—Small sour and pungent berries, something like huckleberries, which grow in Arctic America and Greenland. As soon as the snow melts away vegetation there grows very rapidly, and in many places the ground is soon covered with the porwong vine. The Esquimaux then leave off all work, and go to gather and to cram themselves with the berries.

Posset, or "Poor Man's Punch."—An agreeable beverage, prepared either with milk, wine, ale, treacle, vinegar, cider, or perry. Always flavoured with spices, and then called milk posset, ale posset, cider posset, etc.

Pot Barley.—See *Barley Potage.*

Potage Crecy. — "*Potage*" is French for a thick soup, and "*Potage Crécy*" for a carrot soup. (See also *Purée* and *Consommé.*)

Potash, or **Potass.**—Da. *Potaske;* Du. and Rus. *Potasch;* F. *Potasse;* Ger. *Pottasche;* It., Port., and Sp. *Potassa;* Lat. *Potassium;* Sw. *Pottaska.*

The Potash of commerce, or Carbonate of Potassium, K_2CO_3, is really much the same thing as pearl-ash, only in a more highly purified state, and is obtainable from wood ashes in same way. Many excellent kinds of potashes are also produced from rather different materials, such as the refuse yeast of wine-making countries, and the refuse of brandy makers. These are first dried in the sun, then burned, and afterwards treated like wood ashes, the potash coming from the grape juice contained in the refuse named. A specially pure sample of potash is also made by burning cream of tartar. Hence there are several descriptions, such as Turkish, Moselle, Illyrian, German, Bohemian, Saxon, Dantzig, and Heidelberg potashes.

Potass Water. — The real article should be a solution of bi-carbonate of potash, say 15 grains in half a pint of distilled water, and aerated with washed carbonic acid gas. It is an antacid, and more of a medicine than a beverage, but its continued use is said to lead to depression of spirits.

Potatoes. — Da. *Patater;* Du. *Aardappelen;* F. *Pommes de terre;* Ger. *Kartoffeln;* Hin. and Pers. *Aloo;* It. *Patata, pomi de terra;* Port. *Batatas de terra;* Rus. *Jabloki semlenüe;* Sp. *Patatas manchegas;* Sw. *Potatos;* W. *Pytatws.*

Potatoes are the bulbous roots of the plant *Solanum tuberosum.* In some places, particularly in the United States, they are called *white potatoes,* or *Irish potatoes,* to distinguish them from the yellow or Sweet potato (see *Sweet Potatoes.*) Historians do not agree exactly as to whence, when, and by whom the potato was first introduced. On reference to Jenoway's "Antiquarian Notes," published at Edinburgh in 1823, and at page 207, we find the following historical record:—

"Potatoes were first imported into Europe (Ireland) in 1565 by Sir John Hawkins, from Santa Fé, in South America. They were first introduced into England, on the western coast, by the accident of a vessel which contained some of these vegetables being wrecked at a village near Formby, in Lancashire, a place still famed for good potatoes. Gerard, an old English botanist, mentions that he received seedlings of the potato about the year 1570, and that it grew as well in his garden as in its native soil. Others relate that it was in the year 1596—just over three centuries ago—that the great English botanist, Gerard, first planted potatoes in his garden in Holborn, a pleasant semi-rural suburb in those days, and that he obtained tubers or seeds from Sir Walter Raleigh, who had, in 1586, brought from either South America or from Virginia, U.S.A., samples of this hitherto unknown vegetable, and planted them on his estate at Youghal, near Cork. Gerard, however, recommended them only as a delicate dish, and it is recorded that the tubers were sometimes roasted and steeped in sack—that is, sherry and sugar—or baked with marrow and spices, and even preserved and candied. Shakespeare twice mentions potatoes—in 'The Merry Wives of Windsor,' and in 'Troilus and Cressida'—but he seems to have regarded them as a curiosity of the *materia medica* rather than an article of food. It is curious now to note how slowly the potato made its way to the tables either of rich or poor. In a housekeeping book kept by Queen Anne of Denmark, wife of King James I., an entry, written about 1613, has been found of the purchase of a small quantity of potatoes, from which we learn that the price was then 2/- a pound. Soon after the Restoration, the Government tried to push the cultivation with the assistance of the Royal Society; but progress was slow. In English books of gardening of the time of George I. potatoes are not even mentioned, and as late as the year 1784 they were chiefly found in the gardens of noblemen and

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other rich men. Soon after this, however, the cultivation began to make rapid strides, with good effects upon the health of the people, who, till then, lived chiefly on salted meat and coarse bread, varied by little in the way of garden vegetables. William Cobbett was a persistent opponent of the new food. In his 'English Gardener,' published in 1838, he denounced the substitution of the potato for bread, urging that it had been established by evidence taken before Committees of the House of Commons that to raise potatoes for the purpose would be a thing mischievous to the nation."

The varieties cultivated are too numerous for even a tithe of them to be named here, and the list of new names is increasing every year, but the *Ashleaf*, *Kidney*, *Schoolmaster*, and *Lapstone* are the oldest English favourites. *Bruces* are among the best, and *Skerry Blues* are excellent keepers for spring use.

English people like dry, mealy, and mild-flavoured white potatoes; but in Ireland the popular growths are *Flounders* and *Champions*—the latter a recent introduction from Scotland.

The Irish and the French both seem to prefer the deep-eyed, yellow, and strong-flavoured sorts, while *Kidneys* and other white sorts are more or less despised.

Lincolnshire and Cambridgeshire are now the chief potato-growing districts in England; but in no part of the globe is the potato industry so popular as in Ireland—in fact, the ubiquitous humble "murphy" has long been the staff and study of Irish life, and many a poor old Irishwoman would be worth her weight in gold in a first-class hotel and restaurant, as potato cook. Her practical experience in that line would beat hollow the pretensions of most of the foreign *chefs*.

Perhaps it is a good sign, and not a bad one, that in Ireland the acreage in potato cultivation is now really decreasing. In 1881 there were 855,293 acres devoted to it, whereas in 1896 there were only 705,665 acres. It is hoped the land is being put to more profitable use, and the people enabled to obtain more substantial fare.

In planting or setting potatoes, only those which have fully ripened in the ground should be used. Each plant should have free room to spread its haulms and leaves, but there should be no bare spaces between them. The sets should be 15 to 18 inches apart, with only 2 shoots to each set, and 3 feet space between the rows. The Imperator, Jersey, red-skinned, and other varieties with smaller foliage, do best with about 33 eyes to each 90 feet. It is not wise to cut the tubers into 2, 3, or 4 pieces, for this causes many to rot and die, leaving bare patches in the rows.

The haulm bears flowers of white or bluish colour, and green fruit, or "apples," which contain a poisonous principal. The plant usually continues to form tubers until flowering, but many varieties do not bear flowers, or very rarely, and those which flower do not always "set" the flowers.

As with the sugar cane, so with potatoes, continual cultivation has a tendency to suppress the flowers and prevent their fertilisation. The longer any variety has been in cultivation, the fewer the blossoms, or none at all.

In the Ashleaf varieties, the ability to flower seems to be quite lost. The common potato does not thrive in hot climates, but the species known as *Sweet potato* does very well.

The potato plant has undoubtedly largely helped to bring heathlands under cultivation, but those grown in wet, boggy land are generally watery and waxy, like new potatoes.

Potatoes should be dug up as soon as the green tops begin to turn yellow, spotted, or black, and this should be done in dry weather. They keep best when stored in a dry shed, between layers of dry earth, peat dust, sand, or coal ashes, also where it is dark and cool, for the light turns them green, bitter, and somewhat poisonous. Indeed, any potatoes green on one side from exposure to air and sun when

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growing, are usually considered unwholesome, although, if for *seed*, this greening is beneficial. If too warm or moist, potatoes will sprout, and if too cold they may get frost-bitten.

They should never be left long in large heaps or masses until the *sweating* stage has been passed; the more thinly they are laid out the first two or three weeks the better. Potatoes contain 70 to 80 per cent. of water, 15 to 20 per cent. of starch, 3 to 7 per cent. of fibrous matter, 3 to 4 per cent. of gum, dextrine, or sugar, and 2 per cent. of albumen, gluten, and caseine; hence they are poor in flesh formers, 100lbs. containing only 1½lbs. They are not adapted for consumption as a principal article of diet, and should only be used as an addition to more nutritive forms of food.

For people who live nearly exclusively on meat, like the English, potatoes are very suitable, containing a variety of mineral matters which render them a highly valuable accompaniment. They are slightly laxative in their action, also very valuable for their antiscorbutic qualities, and on this account are much used on board ships.

Inferior potatoes may often be known by their lightness. Thus, a potato with a specific gravity of less than 1.068 may be regarded as comparatively bad.

Potatoes are one of the principal sources of laundry starches, and "polenta," and particularly of the *potato spirit*, so largely distilled in Germany.

France also consumes about four million tons annually in the manufacture of starch and alcohol.

The Potato Blight.—This is now known to be due to a parasitic fungus called *Phytophthera infestans*, and has infested our potato fields since 1844, especially in damp summers. Temperatures between 40 deg. and 70 deg. Fahr., with damp, calm, dull, foggy weather, and particularly if with electrical disturbances, are said to favour its ravages, but temperatures higher or lower than the above are said to check its progress. The first indications of the disease are the unmistakable congeries of white silken threads, termed *aeriel hyphæ*, seen on the under surfaces of the leaves; next appear pale yellow spots, finally turning brown or blackish, and curling up the potato leaves. This is called "potato blight," and is apt to blast the whole crop in a few days, causing a sickly odour to pervade the surrounding neighbourhood. The disease is also carried by animals, birds, and insects, from one field to another. When first noticed, no time should be lost in saving the tubers before the disease reaches the roots.

On the tubers themselves the parasitic attacks are not so quickly noticeable, but if present, dark depressed spots appear, and the skin dies and turns brown. Under the spots the tissue will be dark to a considerable depth, and although the centre may keep good some little time, it is all doomed to rot. The soft fleshy varieties seem to suffer most from the disease.

The most approved specific for potato blight is the "Bordeaux Mixture" or "Bouillie Bordelaise," and is prepared in powder form as follows:—

For one acre, 45 lbs. of copper sulphate, 22½lbs. of quicklime, and 220 gallons of water. The sulphate is dissolved by suspending it, in a coarse cloth, in a wooden vessel containing the water. Slake the quicklime in a separate vessel, and after stirring it thoroughly with added water, pass it through a sieve into the copper solution, stir well, and finally add the remaining water. This solution should first be sprayed over the plants just before the period when disease usually appears, and a second time about three weeks after the first.

Enough lime should be used to neutralise the free acid of the copper or the foliage will be injured.

About 500,000 tons of foreign potatoes are imported yearly into this country, large quantities coming from Canaries, Malta, France, Algieria, Holland, and Germany. In the Canary Islands two crops are often secured, one being ready about Christmas, and the second in March or April. Some of the earliest French come from near Cancale, and St. Malo is a great market

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centre; but the largest quantities are shipped from Barfleur, Cherbourg, and Carteret. Very good ones come from Egypt, where the cultivation is being extended every year. Indeed, new potatoes begin to arrive in January and continue till July, the new English not reaching the markets till about the end of June. Others arrive in May, from Jersey and Guernsey, whence some 65,000 tons are shipped yearly.

Murcia and the Algesiras districts of Spain also send early growths in increasing quantities in competition with those from the Channel Islands. The yield per acre in Great Britain averages about 6½ tons, and this is higher than in most countries, but in Portugal, where the climate is remarkably regular, the crop averages 10 to 12 tons per acre. There the seed varies from one to one and a quarter tons per acre, the former being the ordinary, and from this ton the grower seldom obtains less than 9 tons, but in good seasons he often gets up to 20 tons, and even 22 tons in rare cases! Potato growers do well in Portugal, and many of them are British, but the bulk of the export goes to Brazil, although many tons come here.

Potato growers should remember that their crop may be almost doubled by spraying with above sulphate, and that a book of blue litmus paper is necessary to test the spraying solution as to when sufficient lime is present, but it should also be remembered that the sulphate is very poisonous and dangerous to handle by anyone with open wounds. It is also dangerous to spray cabbages or other vegetables or fruits for early consumption.

New potatoes should always be boiled in hot water, and with their skins on, and a little salt should be sprinkled on them after peeling and dishing.

Many devices have been tried for keeping potatoes good during the winter months and early spring.

In France they are preserved by plunging them in a liquid prepared by mixing from 1 to 2 parts of sulphuric acid in 100 parts of water. After being 10 to 12 hours in this bath—a barrel, tub, or tank will do—they are carefully dried, and stored away in a well-aired cool place. The same liquor may be used any number of times. The acid kills the sprouting flower, and, of course, renders them useless for planting, but for cooking purposes they are said to keep 12 or 18 months, healthy and nutritious as when first dug up. The action of the acid eats into the eyes of the potato, where the skin is tender, and radically destroys the shoots without affecting the rest of the skin. If only a few, the shoots may also be destroyed with the point of a knife, or, better still, an instrument like a steel penholder, with the point turned inwards. It should be inserted one-tenth of an inch, and the eye then gouged out. A person can do 300lbs. in a day. An American plan to keep potatoes from sprouting is to pour boiling water into a tub, then turn in as many potatoes as the water will cover, then draw off the water, and lay the potatoes out to dry before storing them away. Another good way of checking the growth of potato buds is to lay them out on a dry floor, and turn them frequently.

Potato "*scab*," indicated by rough, brown spongy patches on the surface of the tuber, and subsequent rotting, is variously accounted for, (1) as due to a definite bacterium; (2) to the fungus, *Oospora scabies;* and (3) to wounds caused by friction in the soil, naturally or otherwise. The United States Board of Agriculture recommends soaking for 1½ hours in a dilute solution of corrosive sublimate as a cure for this disease.

Dry-Rot, known since 1830, is a kind of after sickness appearing in tubers after they are gathered, and making them soft, shrivelled, and easily broken in pieces.

Wet-Rot, indicated by the putrid liquefaction of the tuber, is a bacterial disease which appears in tubers still in the ground, and is due, according to most authorities, to a definite bacterium, though Bohm regards the cause as a physiological one, connected with interference of respiration in the tuber.

It has pertinently been asked why cannot we have potatoes of any age all the year round? What is the difficulty

in running cargoes across the tropics so as to give us at least two potato seasons a year, and save us from the aged and unprofitable dilapidations of March and April? We get our new potatoes earlier than we did, thanks to Cornwall, Jersey, the Frenchman and the further foreigner; why should we not tap the Cape and have them here in December? The transit is so short, and the keeping in marketable condition can so obviously be only a matter of temperature, that it is a wonder someone has not tried his hand at the problem. Everyone may not like new potatoes, but certainly most of us prefer healthy adults to those in advanced stages of senility. It is not as if the potato trade were a small one. In the United Kingdom alone over a million and a quarter acres are devoted to potato growing, the crops being over four and a half million tons, in addition to the big lots imported from abroad. France has three and a third million acres under cultivation, the yield being 10,100,000 tons, four millions of which are used in the manufacture of starch and brandy, or crude alcohol for "fortifying," and other purposes, the figures showing that with potatoes, as is the case with every other crop, the much praised French farmer, big or little, gets less out of his land than not only the Englishman, but the much despised German, who has 7,600,000 acres under potatoes, and raises from them 32,277,000 tons. Germany, too, imports more potatoes than she exports, so that she consumes in various ways—largely in distillation ways (see *Potato Spirit*)—32,376,000 tons, or about seven times what we do in these islands. About a hundred million tons of potatoes are raised in Europe every year, which is another extraordinary fact in the history of acclimatisation. And with regard to acclimatisation, was it luck or foresight which made Gerarde have his portrait taken with a potato plant in his hand, and published as the frontispiece to his "Herbal" in 1597, when the potato was little more than a curiosity?

Shopkeepers and market-men who often keep their potatoes exposed to the sun in barrels, baskets, etc., should remember every ten minutes of such exposure is injurious. The flesh is thus rendered soft, yellowish, or greenish, and irreparably injured in flavour. If they were stored in a dark place, and kept as much as possible from the light, till wanted for cooking, there would be fewer complaints about potatoes, and consumers would soon know where to get a good article.

Potatoes are best boiled in their skins, which preserves both their flavour and the vegetable acid salts. They require a considerable degree of heat, and should be placed at once into hot water when for boiling; if roasted, the oven should be moderately hot. They lose much goodness by soaking long in water after being peeled. In France, new potatoes are never boiled, but generally fried whole, in butter.

Seed Potatoes are best preserved by packing them in layers with dry peat-dust in wooden boxes, and stored in a cool place. Experiments have proved that undivided large tubers give far larger crops than the same tubers cut up before planting, and the crop is 5 to 18 per cent. less if small whole tubers are used instead of those of average size.

Other species of potatoes have often been sought for, but so far none equally convenient has been found. The tuber-bearing *Solanum Maglia*, a close ally to the common plant, also a native of Chili, which thrives best on damp shores, was introduced as far back as 1822, but it was only in 1881 that it was particularly noticed as being almost equally valuable. Another species, *S. Commersoni*, a low, level plant, native of Uruguay and Argentine, bears similar tubers, and is also in process of experiment, but this latter will not hybridise; *S. Jamessi* is another species from the mountains of South-west United States and Mexico; see also other substitutes: The *Arracacha*, the *Ullueus* and the *Musquash*, elsewhere referred to in their alphabetical order.

Potato Flour, or Meal.—The dried powder of the potato, after all the water has been extracted. A simple way to effect this is to boil the potatoes, and

then allow them to freeze, which will facilitate the pressing out of the water, and subsequent drying of the substance of the potato. (See also *Potato Starch.*)

For prices, apply to M. E. Holdsworth, 3 Norfolk Street, Bradford.

Potato Spirit.—(See also *Silent Spirit, Alcohol, British Brandy*, etc.)—A "silent," or flavourless spirit, distilled from potatoes, originally in Berlin; now, anywhere, and very largely at Altona, near Hamburg.

Potatoes give, by proper treatment, as much alcohol as an equal quantity of grapes.

The potatoes are first washed, steamed, or boiled without paring, then crushed between rollers into a mash-tub, and with warm water converted into a uniform pulpy mass, when the fermentation is induced with one-eighteenth or one-twentieth of their weight of yeast. Finally, distillation and rectification end the process, which is a rather lengthy one.

It is frequently very pure alcohol, and mostly as free from fusel oil as a spirit need be, the fusel-oil being easily removed by filtration through animal or vegetable charcoal. Indeed, it is, or can be made so pure that it bears being mixed with most other varieties of alcohol of pronounced flavour to fortify them, without introducing any new flavour. It is therefore preferred for mixing with wines, etc., especially those containing much saccharine and extractive matter, like Port and Spanish red wines.

Potato spirit, like pure grain spirit, is never drunk by itself, but is generally placed in wine casks, particularly in sherry casks, and allowed to extract the wine flavour which has been sucked up by the wood, or it is flavoured with certain kinds of ether, to represent cognac brandy and other liquors.

Potato Starch, or **Farina.**—F. *Fécule de pommes de terre*; Port. *Farina de batata*; Sp. *Almidon de patata.*

This is also called *English Arrowroot*, and consists of the fecula, or meal, of the common potato, *Solanum tuberosum.* It is a regular Jupiter among the starches so much in use for purposes of substitution or adulteration. The granules of starch are contained in the cells of the tubers, and by bruising or grinding potatoes, and then soaking the pulp in clean water, the cellulose matter goes quickly to the bottom, the supernatant liquor may then be poured off into another vessel and allowed a longer time to settle, after which the starch will be found at the bottom. A considerable quantity is sold as dextrine, or farina, but these generally have a penetrating smell and taste due to the fusel oil in potatoes, although by refining it tasteless and odourless dextrine can be made by the aid of bleaching powder. It is not possible by chemical means to discriminate between the starch of one plant and that of another, and the microscope is the only reliable guide to the analyst. Potato starch has been frequently used to adulterate the higher-priced starches, or sago, tapioca, arrowroot, cocoa, honey, butter, lard, etc. (See also *Potato Flour.*)

Potheen, or Potteen. — An illicit make of Irish whisky. It is said the barley is wetted with bog water in order to excite germination, and the malt dried with young heath and oat husks, to then mixed with about one-fourth of raw corn, and the mashing is made in a kind of vat, the bottom of which is covered with young heath and oat husks, to supply the place of the false one. When the wash begins to boil in the still, the fire is suddenly quenched and the spirit which runs, though weak, is of true flavour. The "singlings" are distilled again, and yield the "genuine" *Potheen.*

Of course this crude product is not to be compared with properly rectified whisky, and is only drunk by the poorer classes.

It usually contains an injurious amount of fusel oil.

Pot-Pourri.— A mixture of odorous flowers, roots, gums, spices, etc., varied according to fancy. It is usually prepared in large jars, from either dried or sweet scented flowers, such as rose, lavender, etc., or the fresh petals preserved with alternate layers of salt; essential oils, or other odorous substances

being afterwards added, such as ambergris, cassia, cinnamon, cloves, musk, orris-root, vanilla, yellow sandal wood, etc.

Potted Meats, or Pastes. — (See p. 86, also *Bloater Paste.*)—Animal substances cooked and preserved in a state fit for immediate use, and usually sold in small pots, jars, glasses, tins, or skins.

They are largely made from boiling offal and shin meat, and are intended more for relishes to tempt fastidious appetites than for their nutritive values. The list includes potted fish, poultry, beef, ham, tongue, veal, chicken, game, bloater, herring, anchovy, shrimps, lobster, "pâte au diable," etc.

Potted Ham of a superior quality is generally expected to be prepared from the Westphalian ham, the flavour of which is so much esteemed by connoisseurs.

The number of these titillations is ever increasing, but they are all prepared in much the same way.

The substances are usually first carefully examined, cleaned, boiled, deprived of bones, sinews, skin, etc., and afterwards run twice through a mincer, then put into a mortar, and pounded, or ground to a perfectly smooth paste, along with a little butter or oil, spice, cayenne, salt, and pepper, or other flavouring material. The meat is then pressed into the pots, tins, etc., a little melted lard or clarified butter being generally poured over the meat to keep out the air. A little essence of lemon is generally added to veal.

The spices used with *hare* should be black pepper, pimento, and cloves; with *white* meats, white pepper, cayenne, mace, and nutmeg. Tongue and ham, corn beef, or spiced beef require no salt when being potted.

Some manufacturers use red earths or other colours, to improve the appearance of their products, but these are usually deleterious, and should be avoided.

Potted meats are liable to go sour and bad very quickly in warm, sultry weather, especially if exhibited in a sunny window.

Potted Shrimps.—After the shrimps have been boiled they are picked out of the skins and seasoned with salt, white pepper, mace, and cloves, all finely ground; they are then filled into pots, and baked in the oven for about ten minutes, and, when cold, generally covered with clarified butter.

Southport potted shrimps have long enjoyed a considerable reputation, but from evidence given before the Sea Fisheries Committee of the House of Commons, in 1893, public confidence in them was slightly shaken by the fact that large quantities of German shrimps, stewed in butter, were being imported ready potted and labelled as "Southport Potted Shrimps."

Pottle.—A liquid or wine measure of capacity, equal to 4 pints, or half-a-gallon.

"Pottle" is also the popular name, in London and some other towns (or rather *was* a few years ago), for the small, funnel-shaped, wicker or splint baskets, in which strawberries and other fruits are vended in the streets. Fruit pottles are longer, narrower, and more pointed than "punnets," and are so formed as to make a very few berries appear a large number.

Pouchong Teas. — (Chinese, *Pastchong*, a sort of envelope.)—A black tea so called because it is usually packed in small envelopes of thin yellow paper and holding about 7 ounces.

This tea is highly esteemed by the Jesuits, and called by the Portuguese "Podréa" (tea of the Fathers).

It only contains about 40 per cent. of soluble matter, and has to be used more freely, but the flavour is very fine.

Poudre de Riz. — A mixture of 250 parts of wheat starch, 150 parts French chalk, 50 parts of carbonate of magnesia, 50 parts of powdered orris root, 2·5 parts oil of lemon, and 0·5 of otto of roses.

Poultry Business.—This subject is also referred to under *Turkeys*. The majority of housekeepers certainly evince a preference for purchasing all they can at the grocery store, and especially their Christmas poultry. Whether it be that they find there what they want in the greatest perfection, or easier in price, is

not clear, but during the last 6 or 7 years it has become a remarkable feature in the trade, and one likely to be extended. Turkeys and geese, in numbers never contemplated, now arrive from France, Canada, and several other points. They should arrest the attention not only of the poulterer proper, but of the distressed agriculturists of the British Isles. A week or two before Christmas, geese, turkeys, ducks, and chickens positively arrive in shiploads from Caen, and Honfleur, and perhaps double the weight from the Dominion of Canada. Thousands of packages of the birds come to be sold on commission and by auction, but the major part are now bought beforehand by representatives of English houses. Skilled poultry handlers are sent to Canada to see to the selection, plucking, and packing, which details have not always been performed according to the English ideas. Instead of large and small, good and inferior birds being bulked and marketed at an averaging price, they should be graded according to size and quality. Thin scalded turkeys, although dirt cheap, are not wanted at any price; but really good birds are usually to be had at 5d. to 7d. per lb.

Geese should not be too large. The size that sells best weighs from 7 to 9lbs. For larger sizes the buyers are limited, and the price per lb. is less.

Ducks should be fat, and should average about 4lbs. each when dressed. Those with breasts clear of meat and sharp as razors are not wanted.

Chickens come from France in cases of about 20 each.

The kind of fowl that is most favoured in the market and on the table is one that is clean and white in the skin and flesh. The colour of a fowl when dressed is not so much an indication of its age as the way it has been treated in killing and dressing. Many kill their fowls by dislocating or drawing their necks. They do not bleed them, and when plucked and dressed they have a dark purple appearance, which is certainly not attractive. Many cannot account for this, but it occurs through the fowls not being bled. The French and foreign fowls we see in our markets are always very white in appearance. Their nice appearance is attributed to bleeding them when killed. The best way to kill a fowl is to push a sharp narrow knife up under its chin so as to penetrate the brain. This causes instantaneous death, and the blood flows freely. A fowl killed in this way will always be as white as possible in the skin and flesh when trussed, and will be quite free from the dark purple shade so often seen. Avoid scalded and full-cropped birds.

Fowls 3 to 5lbs. each are also imported from Canada, and sell profitably at 1/6 to 2/- apiece, but others are marketed too early. It should be remembered that the value per lb. of chickens *increases* with their weight, per bird. There is only about one-third the eating on a 2lb. chicken that there is on a 4lb., although they are half the weight.

Poultry Foods. — (See also *Bird Seed.*)—The foods for domestic poultry appear to be very numerous, but in reality they are quite limited.

It is far too common a practice for retailers to purchase them ready mixed. They would do better to buy the ingredients separately in the first markets, mix the foods themselves, and then sell in small packets or bags, or per pint, quart, gallon, or peck. To manage this properly, retailers will do well to study the feeding and egg producing value of foods, and it is hoped the following observations will be found useful.

"On a recent occasion we had," says a writer in *The Exchange and Mart*, "the curiosity to examine the samples offered for sale at a large suburban general store, somewhat celebrated in the neighbourhood for the general cheapness of the goods sold. The foods were exhibited in bags outside the shop, and priced at per peck, but slight calculations enabled us to realise that maize which can be bought wholesale at 15/- per bushel was retailed in this way at 26/- per bushel. If everything were bought and sold by quarter or by the cwt. it might be better for the poultry amateur, but there would be less inducement for the retailer to handle such commodities. And the former may prefer to buy freshly as required, leaving

POULTRY FOODS—(continued).

the latter to make his own calculations. The foods suited to the healthy feeding of poultry are:—Wheat, barley, oats, maize, buckwheat, rice, barley-meal, toppings, or blues, fine middlings, and sharps—this food being sold under various names in different localities—maize-meal (frequently known as Indian meal), ground oats (obtainable only in the southern counties, where the oat is ground with specially-prepared stones), oatmeal (which is more costly and less valuable for poultry), buckwheat meal (not usually obtainable), and meals made from ground lentils, peas, or beans, these being adapted for mixing with Indian meal or rice-meal. For growing chickens the list of foods may be extended so as to include whole rice, groats, milk and skimmed milk, given either as a liquid or through the medium of curd, which is one of the most valuable and economical of all foods, both for adult and for young fowls; potatoes, which are excellent when boiled or steamed, and mixed with bran or pollard, or even with bean or pea-meal, or skimmed milk; swede turnips and mangels, both of which are excellent succulent food for use in the winter season, when the birds are confined to their runs, inasmuch as both contribute to the maintenance of condition and to the increased production of eggs.

"The wheat which is imported into this country, like that which is grown, is of good quality, weighing from 61½lbs. to 63lbs. per bushel, so that in buying such a food as wheat—now obtainable at something like 20/- per quarter, or 2/6 for 62lbs., less than ½d. per lb.—we are purchasing a valuable as well as a cheap food. Maize weighs about 60lbs. to the bushel, and as this is obtainable at from 15/- to 16/6, it is possible to get a bushel of 60lbs. for 2/- or thereabouts when buying wholesale. Barley, especially that which is cheap and imported, weighs about 50lbs. to the bushel, whereas good sound English barley may weigh 56lbs. The imported barley is largely converted into meal, and this is the material which is commonly sold to the poultry-keeper who uses soft food for his birds. A great deal of this meal contains useless adulterants, such as the outer coating of the grain, which, like barley itself, is steely, hard, tough, and indigestible. If barley-meal is generally used, there is no better plan than to buy a large quantity, have it ground at a mill where perfect reliance can be placed upon the miller. Imported barley, especially that from Persia, is sometimes ridiculously cheap.

"It is far easier to buy whole grain than ground grain, but in a general way, and from early spring to the end of autumn, whole grain may be given to all birds which have their liberty; whereas birds which are confined to runs, and especially those kept throughout the winter, are frequently benefited by the employment of soft foods given in the early morning in a warm state, or mixed with hot, boiled potatoes.

"There is no doubt that variety in feeding poultry is very necessary. Some foods, like maize, are extremely fattening: hence, valuable as they may be occasionally, it is not advisable to give them regularly, especially to birds of a lethargic temperament, which rapidly accumulate fat inside their bodies. Wheat and barley are also fattening in a minor degree, but if as far as possible foods are given in such variety that a fair proportion of starchy matter—which may be termed carbonaceous—to muscle-forming or albuminous matter, is provided, then the results are likely to be the most economical. Such results of scientific experimental feeding as are obtainable, suggest that the food of poultry should contain about one part of digestible albuminous matter to six parts of digestible carbonaceous matter. This is closely obtainable in oats, but not in either of the other cereals. It may, however, be obtained, if they are mixed in small quantities with such a food as bran or ground peas or beans. It may also be obtained if the foods are mixed with skimmed milk, which is rich in a material known as casein, as well as containing a small proportion of albumen. Where maize is largely used—and its low price is sufficient to tempt the poultry-keeper to use it very generally—it is more

POULTRY FOODS—(continued).

economical if mixed with the foods we have suggested for the purpose of equalising the ratio.

"In order to obtain a thorough knowledge of the provision of the required ratio, it is essential to become acquainted with the composition of the different poultry-foods, together with the total organic matter in each, and the total ash, or mineral, or incombustible matter. It is of importance that the feeder should know the percentage of albuminous matter which a food contains, together with the percentage of starchy matter and oil, all three of which contain a large quantity of carbon, so essential for maintaining the heat of the body. We may take the case of maize, a large proportion of which food is digestible. If it is given alone, the birds consume a larger quantity of starch than is essential, and a smaller proportion of the albuminous matter, which we may take it is largely responsible for the feeding matter of the egg. In order that a sufficient quantity of albuminous matter may be obtained to provide for a bird's requirements, it is essential that when feeding solely upon maize, it should consume more of the starchy or carbonaceous matter than it requires in order to obtain a sufficiency of albuminous matter, hence the surplus quantity of starch is wasted. If, however, we add to the maize ration a small quantity of flesh, such as the cooked intestines of the sheep, which are of extreme value to poultry and very cheap, or if we mix maize-meal with skim-milk or with pea-meal, which is highly albuminous, we thus afford a ration which is more in accordance with the requirements of the bird, and consequently more economical.

Potatoes are very commonly given to poultry, inasmuch as their feeding-value is recognised; but the feeding-matter in the potato is principally starch, and it would be possible to completely starve birds which were fed solely upon this food. If, however, we add skim-milk to the potato, or mix with it an albuminous food, such as pea-meal or bran, we again arrange a balance, and the birds consuming the mixture thrive much better and at a more economical cost than would otherwise be the case. Successful feeding has long been recognised as an art; but in these days it is based upon scientific principles. The production of eggs, as of meat, is the result of the consumption by an organised creature of certain materials which are defined by the chemist. These materials include mineral matter for the construction of the bones and the feathers, among other things; sugary, starchy, or fatty matter for maintaining the heat of the body and providing for the waste of energy or force, as well as the fat of the carcase; while the albuminous matter, or the matter containing nitrogen, provides for the production of muscle, or lean of the flesh, of the intestines, and of the tendons of the birds. The proportion in which these various constituents of food are given, is a matter which concerns every feeder. As we have pointed out, one portion may be wasted in order to obtain sufficiency of another; but this is avoided if the foods are properly balanced by a judicious mixture, or if originally well-balanced foods, such as the oat and new milk, chiefly form the rations of the birds."

Foods for Producing Eggs:—

(1) Pea meal mixed in liberal proportion with hot mash of middlings, from its richness in nitrogenous matter, is an excellent egg-promoting food.

(2) A condimental powder, containing carbonate of calcium, *i.e.*, oyster shells and sulphates of iron and sodium, has a beneficial action in giving good coloured yokes and thick hard shells.

(3) *For Poultry Spice*, mix coarsely-powdered oyster shells, 1lb.; dried sulphate of soda, 8 ozs.; dried sulphate of iron, 8 ozs.; gentian root, in coarse powder, 8 ozs.; powdered black pepper, 8 ozs.; powdered cummin, 8 ozs.; and powdered capsicum or cayenne, 2 ozs.

(4) Bone meal, linseed meal, dried meat, spent lime, and oatmeal, of each 2lbs.; red pepper and sulphur, of each 2 ozs.; salt and iron sulphate, of each 4 ozs. Mix, and give one spoonful per hen, in soft food, three times a week.

(5) *To make hens lay in winter*, mix 4 ozs. powdered egg shell or phosphate of lime, 4 ozs. sulphate of iron, 4 ozs. ground cayenne, 2 ozs. ground fenugreek, 1 oz. ground black pepper, 2 ozs. silver sand, 6 ozs. ground lentils or ground dog biscuits. A tablespoonful to be mixed with sufficient meal or porridge to feed 20 hens.

(6) *Coloured Poultry Food.*—A mixture of the red non-pungent bird pepper and annatto.

(7) *Poultry Spice.*—The following is said to be of assistance to the hens during the laying season :—

	Oz.
Mustard	20
Fenugreek	15
Ground oyster-shells ...	12
,, bones	8
Sulphate of soda	4
Cayenne pepper	10
Black antimony	10
Peroxide of iron	10
Corn flour	20
Asafœtida	1

All in powder and mixed.

A teaspoonful in the food for a dozen hens.

This mixture may be used as a condition powder for poultry generally, especially when they are out of sorts.

(8) *Douglas' Mixture for Fowls.*—This appears to consist of ferrous sulphate, 8 ozs.; dilute sulphuric acid, 1 fl. oz.; and water, 2 gallons. One teaspoonful of the mixture is added to a pint or more of water.

(9) One very popular preparation for increasing the production of eggs is known as "Roger Errington's Poultry Spice." In 1d. packets; tins at 6d. and 1/- each; or bags at 2/6 each. Address—Roger Errington, Victoria Mills, Sunderland.

The above indicate the best egg-laying stimulants. There are many others, but some of them probably exert a more suggestive influence on the minds of the owners than on the hens.

Cuttlefish Bones.—(See p. 316.)—They are considered excellent for all kinds of poultry, and may be had—Broken, at 15/- to 18/- per cwt.; Natural, 12/- to 18/-; Selected, 48/- to 60/- per cwt., from C. Windschuegl & Co., 1 Leadenhall Street, London.

Cheap poultry foods may, of course, be made up of cracked maize, damaged grain, etc., which are always plentiful in our shipping ports; but it should be remembered these may be as unfit for valuable poultry as for human use. In any case, the addition of a little spice is desirable. Man seasons his own food, and then enjoys it. Why not season the insipid or distasteful foods of domestic fowls and animals? Do they enjoy it? Try them.

Gardner's patent "Rapid" Sifter and Mixer, freely used for above. Prices from 50/- to £100. Catalogues from Wm. Gardner & Sons, Engineers, Gloucester.

For all kinds of grain and spices suitable for poultry, apply to Hedley Gamble & Crosfield, Circus Street, Liverpool.

Pound Cakes.—Made similar to plum cakes, only using *one pound each* of the ingredients—butter, eggs, sifted sugar, flour, and fruit, and flavouring with spices.

Powder Blue. — Da. *Blaafarve;* Du. *Blaauwzel;* F. *Bleu d'empois;* Ger. *Blaussel;* Pol. *Lazur;* Port. *Azul de esmalte;* Rus. *Skorbilo;* Sp. *Polvos azulos.*

A composition, made of a blue pigment mixed with starch, wax, and occasionally a little alum. The whole of the substances are boiled together, and when dry the mass is reduced to an impalpable powder.

Its use is to stiffen linen, and especially to impart to it an azure cast, which makes it appear of a whiter hue.

It is sometimes called smalt blue.

For all kinds of laundry blue—Ball Powder and Indigo, apply to Keen, Robinson & Co. Manufacturers of KEEN'S OXFORD BLUE, Garlick Hill, Cannon Street, London, E.C.

Pralines. — A sort of French bonbons or oval-shaped sweets, each of which consists of a burnt almond encased in sugar.

They are now made of various quali-

ties, sizes, colours, and flavours, but were first invented by a servant of the French marshal du Plessis-Praslin, and so named after the latter.

Prawns.— F. *Langoustans;* Port. *Camaroes;* W. *Mathogragen-bysg.* (See also *Shrimps.*)

These shellfish are very closely allied to, and very much resemble, shrimps, but differ from them in size, being much larger, and having a long serrate rostrum. They are also more delicate in flavour, and more highly esteemed.

Prawns abound along the British coasts, though not so numerously as shrimps, and are taken in traps, or bated nets, a little distance from the shore. They should boil a bright red, and have no spawn under the tail. They are sold both fresh and cured; sometimes in tins.

Preignac Wine.—A white French sort of first-rate quality, known as one of the *Sauternes* produced in the Bordeaux district.

Prepared Foods, for Infants, Invalids, and the Aged.—F. *Aliments pour enfants et malades;* G. *Nahrungsmittel für kinder und kranke;* It. *Alimenti per bambini e ammalati.* (See also *Breakfast Cereals, Barley, Peptones, Humanised Milk, Liebig's Food, Manna Croup,* etc.)

Of the making of these prepared or pre-digested foods there seems no end, and they are often very useful for persons with digestive powers too feeble for ordinary diet.

Flour completely changes in character when dried or heated to a high temperature. As bakers and millers know, even 140° Fahr. completely "kills" the flour for breadmaking purposes, it will not unite with water to form dough, but mixes like sand or dust in water, with no sign of gluten. This pre-digestion of starch by heat has long been recognised. Hence, the basis of biscuit powders and prepared foods is generally baked flour of some sort, with malt, and with or without dried milk. While holding a useful place in the dietaries of invalids and infants, it is said these foods are too often used as *substitutes* for, instead of adjuncts to, milk.

Evidently their proper use does not create sufficient demand to meet the excessive production of these profitable articles. Hence the demand is artificially increased, and freshly-prepared home-made articles discarded. Invalids are to be fed on factory prepared foods and extracts months and years old. Even the fresh milk of the cow is discredited in every way. It must now be "sterilised," "peptonised," "humanised" before it is fit for use. Dr. A. W. Blyth, in his work on "Foods," says that most of these Infants' Foods are entirely unsuited to be the food of young infants.

A child at the breast is more of a carnivorous than an omnivorous animal, and will digest all kinds of meat-broth, meat itself, and albuminous foods with comparative ease; but if, instead of its mother's milk, a large amount of starchy and saccharine food is given, so little may be digested that the infant is starved.

Some of these Foods consist solely of the flour of maize, but the majority are mixtures of starchy saccharine and albuminous powders. Many of the so-called farinaceous foods for infants are really only flour baked to a light brown colour and sweetened with sugar. The high temperature ruptures the starch granules, and converts some of the starch into soluble substances, called dextrin and grape sugar. The tops and bottoms of loaves have the same properties. Both are good for children above seven months of age.

Infant Foods are useful in this, that when mixed in milk the fine powder breaks up the casein into finer divisions. It is not generally known that in France it is forbidden, under severe penalties, for anyone to give infants under one year any form of solid food, unless such be ordered by written prescription, signed by a legally qualified medical man. Nurses are also forbidden to use in the rearing of infants confided to their care, at any time or under any pretext whatever, any nurs-

ing-bottle provided with a rubber tube. In organic diseases of the stomach and bowels some of the preparations are admittedly very valuable, but, being of doutbful value in functional disorders, they should not be resorted to until ordinary means have been tried and failed; and they are also said to be useless, if not injurious, where it is the *secondary* digestive processes that are at fault. Those foods that contain milk have, of course, the highest nutritive value, and those containing sugar and malt are most valuable as additions to milk. Without milk and sugar they form by themselves a very insufficient food, but they may be added to beef-tea, and taken as alternatives to milk. Chestnut flour has been highly commended as suitable food for children, and easy of digestion, as it contains over 40 per cent. of nutritious matter soluble in pure water.

Indian Dhal or Pigeon peas and Soy beans are also used in some of these patent foods.

Typical Recipe for Infants' Food:—

Biscuit powder, 24 parts.
Baked wheat flour, 16 parts.
Finest ground oatmeal, 6 parts.
Sugar of milk, 6 parts.
Powdered malt, 8 parts.

Each ingredient to be dried slowly, and then all well mixed together, or, better still, have the wheat flour and oatmeal mixed with milk, and baked in the biscuit; then ground up with the powdered malt. The finely-powdered malt renders the starch in the foods more assimilable, but it must be remembered that these malted foods should not be stirred into boiling water, but only mixed with a little warm water before "cooking."

For Invalids' Food.—Same as above, with addition of 25 per cent. of Lentil flour and 12½ per cent. of locust bean powder. The malt should not be cooked, but added to the baked "biscuit" in grinding. A ready way, however, for making Infants' Food is to get a baker to make a mixture of 3 parts of the finest wheaten flour and 1 part of finely-sifted malt into biscuits, adding 5 per cent. of milk sugar to the flour mixture. The biscuits should not be browned, nor should any butter be added to the dough. Grind the biscuits while fresh. There are many roundabout processes for the preparation of the food, but most of them come to the same thing in the end.

It is very essential for infants that their food be fresh.

Apply to Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool.

Gardner's patent "Rapid" Sifter and Mixer, freely used for above. Prices from 50s. to £100. Catalogues from Wm. Gardner & Sons, Engineers, Gloucester.

Preservatives.—(See also *Antiseptics.*)—The chief preservatives used for foods and drinks are salt, saltpetre, borates, borax, boracic acid, formaldehyde or formalin, and salicylic acid.

Great caution must be observed in using preservatives, the law at present being uncertain as regards the extent to which they may or may not be employed. The following are used for curing pork, beef, sausages, etc., so as to impart a cherry red colour:—

1. A mixture of about equal parts of borate of soda (or borax) and common salt. Use 1lb. for every 100lbs. of meat. (Some add a *little rosaniline colour or other dye.*)

2. The above also "prevents sausages turning sour or losing colour, even in the warmest weather."

3. A Preserving Salt to make meat red: 6 parts boracic (boric) acid, 2 parts common salt, 11 parts saltpetre, 1 part water.

It may be noted that borax and its derivatives are not really curatives, but merely preservatives. Salt cures meat, but borax only preserves it after it has been cured.

In curing fresh meat saltpetre preserves red colour, but is open to two objections. The operation of curing takes too long a time, and it renders the outside of the meat hard.

The common preservatives for beer are sodium salicylate and borax dissolved in glycerine.

Preserved Ginger. — (See also *Ginger*.) — Preserved ginger, both Chinese and that from the West Indies, are supposed to be prepared from the same kind of plant, *Zingiber officinale*, but Chinese is much more tender and succulent than the West Indian product —so much so that it is impossible to dry the rhizomes sufficiently to render them fit for export in the usual commercial form; if it had, dried ginger would have been exported from China long ago.

In China the young green tubers, or "hands" of the plant, are first scalded, then washed in cold water and peeled. They are next covered with a weak syrup (say, 1lb. lump sugar in 6 pints of water for 12lbs. of ginger), and left for two days. The syrup is then poured off and replaced by stronger syrup, and this is repeated two or three times until the syrup is made very thick (say 12lbs. sugar in 12 pints water, boiled and stirred till of the consistency of virgin honey), and the ginger swollen, bright, and nearly transparent. The pieces of ginger thus charged with syrup, are then packed in jars or glass bottles as close as possible, and these are next filled up to the very top with more thick syrup, so as to leave no room for air. The bottles are finally corked and the jars made air-tight by pasting lids and parchment over them. The removed syrups are not lost, but fermented into a pleasant and popular beverage known as "cool drink," very agreeable in hot countries. The Chinese preserved ginger is nearly all prepared at Canton and Hong Kong. The best known brands rank as *Chyloong*, *Manloong*, *Cheelong*, *Tongleeshan*, etc.

A kind known as *Ng Mai Keuing* is preserved in Swatow, from an Alpine plant (*Alpinia galanga*), but it is not like the Canton and Hong Kong ginger, and is only made up for native consumption, to be used medicinally or for cooking. Some of it goes to the Straits Settlements, but none to Hong Kong.

That preserved in Jamaica is mostly put up in glass bottles, but the prices are usually exorbitant.

The best preserved ginger is of bright yellow colour, almost transparent, consisting of the young and tender tubers only.

A considerable quantity is now preserved in this country from the imported root. The ginger arrives here in small tubs, and is first drained and reboiled in syrup. The pieces are finally crystallised by allowing to stand in syrup of a certain consistency, when fine crystals of sugar soon form on the surface. It is, however, generally very dark coloured and fibrous. (See *Crystallised Fruits*, *Ginger Marmalade*, etc.)

Special Firms: M. E. Holdsworth, 3 Norfolk Street, Bradford; Morris, Jones & Co., 13 to 19 Sir Thomas Street, Liverpool.

Preserved Milk. — See *Condensed Milk*.

Preserved Provisions.—F. *Conserves alimentaires*. See also *Canned Fruits*, *Australian Tinned Mutton*, *Beef* (tinned), *Provisions*, *Tinned Meats*, *Rabbits*, *Salmon*, *Sardines*, *Charqui*, *Den-deng*, etc.

The modern system of preserving provisions is comparatively new, and differs from the old and common methods of using salt, saltpetre, sugar, etc.

M. Francois Appert, a Frenchman, was, in 1796, the first to succeed in the attempt to preserve unsalted or fresh meat. It consisted in partly cooking the meat, heating it in a glass vessel, and then hermetically sealing the lid. Tins were afterwards substituted for the glass vessels, and they were heated up to 212° (boiling point of water), the steam issuing from a small hole left in the lid, after which molten solder was dexterously applied to the hole, and the tin became hermetically sealed.

A defect in this system was the overcooked conditions of such food, but a remedy has since been found in the sealing of the tins first and then bringing them close up, but not actually, to boiling point (or the steam inside would burst them), when, upon being punctured, the heated air and vapour escape, and the tins are once more soldered.

This is the newest and most perfect process (See *Tinned Meats*, *Salmon*, etc.). In hot climates, on board ship, etc., where fresh meats are usually

scarce and bad, these preserved provisions are invaluable, and even positive luxuries.

Among the numerous *Tests for Bad or Defective Canned Goods* the following have been recommended :—

Reject every article that does not show the line of resin around the edge of the solder of the cap, the same as is seen on the seam on the side of the can.

Suspect every can that does not have the name of the manufacturer or firm upon it, as well as the company or town where manufactured. Standards have all this. When the manufacturer, packer or wholesale dealer is ashamed to have his name on the goods, fight shy of them.

Press up the bottom of the can. If decomposition is set in, the can will rattle the same as the bottom of the oiler of a sewing-machine will do. If the goods are sound, it will be solid, and there will be no *rattle* in the tin. Reject every tin that shows any sign of *rust* around the cap on the inside of the head of the can. If housekeepers were educated on these points, then the muriate of zinc amalgam would soon become a thing of the past.

Foods are also "preserved" by salting, desiccating, smoking, refrigerating them, and these processes are dealt with in their alphabetical order.

Preserved Flowers, Leaves, etc.—In Roumania the petals are very largely used for flavouring preserves; violets, lime-tree flowers and roses especially. (See *Crystallised Fruits.*)

Preserves.—F. *Conserves.*

A general term for jams, jellies, and marmalades; also candied or bottled fruits or vegetables, when *preserved* or seasoned with sugar or syrup, especially for those which are preserved whole or in slices.

There are two ways of interpreting the word "preserving" as applied to fruit. With housekeepers it means that the fruit is boiled or cooked with a generous amount of sugar (see *Jams*), but in its broadest sense, "preserving," when applied to food, means to save from decay by drying, canning, combining with a preservative substance, etc.

The most primitive method was by drying the raw article in the sun and air, and this is still practised to a great extent. Artificial methods of drying are also often used, but the sun develops in some fruits a flavour which is lacking when artificial heat is used.

Raisin growers often have drying houses, but they only resort to them when the sun fails. On the other hand, peaches, apples, and apricots, have a fresher and more appetising appearance, and realise more money when dried in evaporating machines. In drying fruit it should be sound, and of good quality, and should be prepared quickly and dried rapidly. When all moisture is expelled it will keep for years in a dry place. In some places the fruit is cooked a long time, till reduced to a paste, then spread out in thin sheets and dried either in the sun or in machines.

Fruit dried by either of the above methods must be softened by the addition of water and recooked before using. A third process is to cook the fruit for a long time in sugar and water, and then partially dry it. In this case the sugar is largely the preserving agent, and the drying goes on only until no syrup drips from the fruit.

These three methods of drying enable us to have figs, dates, prunes, apricots, peaches, apples, ginger, candied peels, etc., from any part of the world. But of all processes, that of preserving by the exclusion of air is now the chief, and is known as Canning. (See *Canned Fruits.*)

Another very popular method of fruit conservation in the United States is for housewives to keep by them a good stock of glass jars, made with screw metal tops lined with china, and a washer of indiarubber. The process is first to get the glass jars well heated by standing them in cold water, which is brought to the boil, then fill with fruit, cooking it till tender; add sugar to the juice that flows from the fruit, so as to make a syrup, then fill the jars quite full, and hermetically seal

while quite hot. Apples, pears, plums, peaches, cherries and even raspberries, strawberries, etc., thus preserved are so infinitely superior for winter use to sickly over-sugared jams, that the latter are rarely met with.

A few kinds of fruit, rhubarb, green gooseberries, and some dry sorts of plums can be canned or jarred without heat or sugar. The jar is packed full of the fruit, and then placed under a faucit, having the water rapidly run in for a moment, so that all the air in the jar is displaced. It is then sealed and put away in a cool dark place. But not many fruits, especially the juicy kinds, will keep good if done in this manner. If, however, the fruits have their own weight of sugar added nearly all will keep very well, except strawberries. Pine apple treated in this way is simply perfection.

The French system of candying is another way of preserving. (See *Candied or Crystallised Fruits.*)

All fruits and vegetables used for preserving purposes should be gathered in fine dry weather, and if possible after the morning sun has been shining upon them for a little time; for, although it is an exploded fallacy to suppose that preserves made from wet fruit will not keep at all, dry fruits are much to be preferred, and should be secured if the fullest flavour is to be retained and the longest keeping qualities assured.

Californian Fruits seem to be superseding all other imported kinds in the English market. The first four months of 1900 bringing over half a million cases of the tinned varieties.

Having always been found remarkably sound and attractive, they are now preferred before all others. Indeed, such is the care taken, and the thoroughness of the processes, we cannot recall a single instance where genuine Californian brands have been found defective. The different grades may be described as follows: Extra 3s and glass—Carefully selected fruit in extra heavy syrup. Extra ½s—Extra fruit, carefully selected, in extra syrup. Extra standard 2½s—Cans well filled with fine selected fruit in good syrup. Standard 2½s—Cans well filled with sound fruit in fair syrup. Seconds 2½s—Fruit irregular in size, cans fairly filled, small amount of sugar. Water 2½s—Cans filled with fruit, no syrup.

Pickling and "preserving" are too often regarded by housewives as purely domestic matters, as unscientific as washing and ironing.

In view of the gluts of fruit in certain years, and the ignorance of preserving among the poorer people in towns and villages, the commercial fruit preservers have it pretty much their own way, and are able to produce superior qualities, and at less cost. Foods properly preserved will keep good a very long time. A significant illustration of this was proved to the world in 1878. After the campaign of Waterloo a large amount of supplies, including tinned food for the troops, were returned to store in England, and hundreds or thousands of the tins lay untouched till the opening of the 1878 Exposition at Paris, whither a number of them were sent as a curiosity. They were there opened at random by the judges, the contents tasted, and found to be as sweet as when first prepared, though the meats must have endured for at least 63 years in their hermetically-closed envelopes. The thing is perfectly natural. Let the sealing be complete, and even the most ordinary perishable article of diet must resist decay as long as the outer air is excluded.

Press Coal.—This consists of dried and compressed lignite. There are about 60 press coal works in Germany.

Preston Salts. — Same thing as Volatile Spirits of Hartshorn, the Sesquicarbonate of Ammonia.

Prickly Pears. — These are also known as Barbary Figs, Indian Figs, etc. They are the pear-shaped fruit of *Opuntia tuna,* a species of Cactus, or Cardoon.

There are several varieties, native of South America and Mexico, now grown in the West Indies, Brazil, Florida, etc., but we receive most from Spain, Algeria, and other parts of Africa.

The wild varieties—although sweet, nutritive, juicy, and invaluable in dry, hot, sandy countries—are generally flat

and insipid to the taste. They abound in India, around Delhi, and were introduced into the Deccan by a Sirdar of the old Poona Court to be grown as a defence against military attacks.

The plants are also found a convenient hedge between fields or a fence about farmsteads, being at once impenetrable and uninflammable. The jointed, juicy, columnar stems of the plant form an excellent fodder for cattle, so do the leaves and fruit, although both leaves and fruit are armed with minute but very sharp and stinging prickles, which produce violent inflammation and swelling, like nettles. Sheep and cattle are very fond of this fruit, and soon get fat on it. In some parts of Africa the leaves are chopped and fed to ostriches and dairy cows during droughts and periods of scarcity. The plant thrives best on barren spots, rocky shelves, etc., where nothing else will grow—indeed, it will thrive nowhere else—and is, therefore, of great value in restoring vast tracts of desert lands to cultivation, although owing to the vitality of its hard seeds, it is difficult to extirpate it when it once spreads.

In New South Wales it has become such a pest that the Government have had to take steps to eradicate it.

The plants are a great pest in South Africa, especially on the farms around Graaf-Reinet, and spread with astonishing rapidity, and are so tenacious of life that if a leaf or a small portion of a leaf be thrown on the ground it strikes out roots immediately.

In some regions a kind of treacle is made from the fruit and used instead of butter, also a strong coarse spirit, of horrible taste and smell. The proper way to peel one is to hold it on a fork or skewer while you cut it open and remove the skin. They should never be touched by the hand, or they will sting like nettles.

The *White Prickly Pear* is noted for its agreeable acid flavour. The *Yellow* is rather sweeter; the *Crimson*, both large and small, are quite sweet; the *Japona* is so called by reason of its costive effect when eaten in large quantities; the *Pelona* (a naked variety, almost destitute of the objectionable prickles) is a great forage plant, and will grow almost in any warm climate if not very damp. The leaves are very large and thick, averaging about 8lbs. each.

Another variety, the *Xoconostle*, makes a most delicious preserve, its peculiar "foreign" flavour being much esteemed, and quite as distinct from other jams as Indian chutney is from English pickles.

Primeurs.—A French term for early or "forced" vegetables and fruits. A large business is done in these at Paris during winter and early spring, the merchants and collectors sending them to nearly every market centre in the north of Europe.

Primrose Soap. — This name is rather arbitrary, and is used to designate widely different qualities of soap in different parts of the country.

In the South it is applied to a light-coloured tallow-resin soap, which usually consists of about 62 per cent. of fats, 6 of soda, and 32 of water; while in the North it is made of 42 per cent. of fats, 7 or 8 of soda, and about 50 per cent. of water—the latter product being, of course, very inferior.

The best primrose soap, clarified and rendered transparent in alcohol, is of a light golden sherry colour, but much of that met with is much darker, owing to inferior materials or manufacture.

Provisions.— F. *Vivres, Salaisons.*

The reader will find much anent provisions under most of the following headings:—

American Produce, page 40.
Australian Mutton, page 63.
Bacon, page 68-70.
Bath Chaps, 80.
Beef, 83-86.
Blended Butter, 118.
Boars' Heads, 121.
Brawn, 134.
Butters, 154-159.
Canadiar Produce, 168-170.
Cheese, 210-215.
Condensed Milks, 290.
Clotted Cream, 247.
Danish Produce, 318-321.

PROVISIONS—(continued).

Dutch Cheese, 339.
Eggs, 345.
French Butters, 386.
Hams, 455-457.
Hung Beef.
Irish Produce.
Italian Produce.
Kiel Butters.
Margarine.
Margarine-cheese.
Meat Pies.
Mortadella.
Polonies.
Pork Pies.
Rein-deer tongues.
Sausages.
Smoked Meats.
Swedish Bacon, Butters, etc.
Tinned Meats.
,, Mutton, 63.
,, Fish.
Westphalian Hams and Tongues.

certain hold of his farm and the latter only a life-end interest in the rent obtainable. The result seems to be that neither has sufficient interest in the land to make the necessary arrangements or improvements, and the foreigners are getting the benefit.

The Provision Department of a retail business is generally the most important one, and demands greater care and competence than any other. An indifferent hand may weigh up and serve out ordinary groceries, but the "provision side" requires a man who has learnt his business—that is, if it is to result in a gain instead of a loss. How often has a grocer without any practical experience tried to improve a drooping trade by adding provisions, and how surely has he come to the ground. It is often thought to be a very simple affair, and capable of being conducted with ordinary ability and attention. Very much

VALUE OF IMPORTS OF PROVISIONS.

For five years ending December, 1899.

	1895.	1896.	1897.	1898.	1899.
	£	£	£	£	£
Butter	14,245,230	15,344,364	15,916,917	15,961,783	17,213,516
Bacon	7,925,979	7,854,515	8,867,846	10,321,674	10,400,602
Cheese	4,675,130	4,900,342	5,885,521	4,970,240	5,515,091
Eggs	4,003,446	4,184,656	4,356,807	4,457,117	5,044,392
Margarine	2,557,170	2,498,425	2,485,370	2,384,384	2,549,376
Hams	2,898,018	3,136,089	3,681,966	3,894,839	4,094,500
Lard	2,941,941	2,268,693	1,993,143	2,887,801	3,068,985
Preserved Meat	2,040,006	1,775,507	1,702,315	1,802,440	1,896,733
Beef (in t'rces)	286,511	303,700	215,901	273,004	230,943
Pork ,,	269,829	291,966	253,693	319,778	305,829
Total £	41,843,260	42,558,257	45,359,479	47,273,062	50,319,967

The Combined Imports for the Provision and Grocery Trades amount to nearly £95,000,000 in 1899, or slightly over half of the Food Imports, and almost ⅕th of the total Imports (£485,075,514) into the United Kingdom.

In glancing over the above list, it is remarkable how largely the products are importations. Provision farming seems to have fallen into the hands of foreigners, partly because such pursuits are not sufficiently dignified for the British farmer, and partly because land laws afford little encouragement to either farmers or the so-called land-owners, for, as a rule, the former has only a year's

depends on the buying, and the buyer who betrays ignorance is pretty certain to be taken advantage of by some of the wholesalers. The man whose trade is likely to be limited will do far the best to buy his cheap bacon ready washed and dripped from some well-known, honest, and experienced wholesale firm, whose advice may be relied upon. The so-called *splendid bargains* he may be

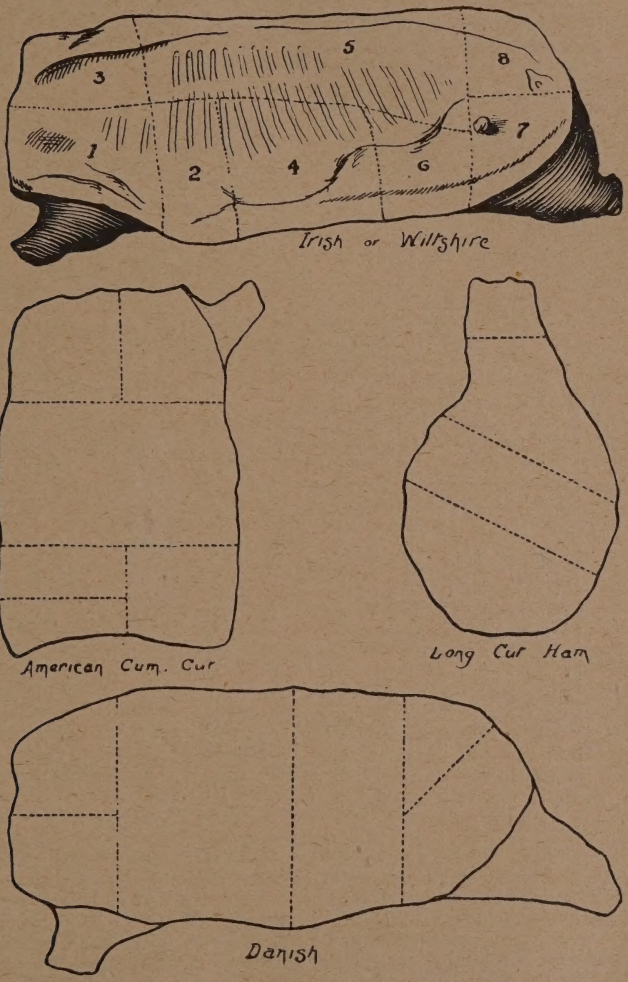
PROVISIONS—(continued).

offered every day had better be left for others.

No doubt there are great opportunities in provisions for making money. The markets are always moving up and down, so that there is decidedly more scope for a man's judgment, if he has any, and if successfully applied in selling as well as in buying; but the better way for such a man to proceed would be to consider whether he can find and afford to keep a competent and trustworthy assistant.

Finding such a one will probably be his main trouble, and when secured the buying had better be done "from hand to mouth," and all large speculative transactions declined. To take on a cheap, incompetent assistant will most likely prove ruinous. Judgment in buying the right qualities and quantities, in the right quarters, at the right prices, storing, arranging, and displaying, cutting up, and the *selling* are matters calling forth qualifications which require a man's abilities as well as his energy. A man smart at tea, sugar, and general things is valuable; but an able hand at the provision counter is invaluable. The counter should, of course, be kept scrupulously clean and tidy, although the single-handed provision man requires to be all over the shop, or rather all round his stock; he must be outside as well as inside. We can recall few greater treats than watching a clever man waiting on his lady and gentlemen customers at his busy times, pointing out with his sharp and ready knife the quality he thinks will suit, and marking off the suggested cut with one eye, while watching for the nod of assent with the other, but ever supremely cautious not to cut until he gets the order; and after he has made the cut he does not submit it for a second approval, but weighs and wraps it up with smartness, lest the buyer should equivocate. The handiness, neatness, and civility thus displayed, and the result of a few hours' activity, are convincing that the secret of success is not noise, bustle, talk, and pretension, but tact, judgment, and decision. A capable and clever provision hand will often be worth £5 a week, where one of the surly, lackadaisical, or precocious sort, working in a perfunctory manner, would be dear at 20/-. People like to be waited upon by men able and ready to show them what suits them, but we often see shopmen first cut a piece, and then submit it to the customer for inspection. That is a very bad practice, indeed; too often such cuts are declined, and what becomes of them? They are left to grow stale and rancid, and thus prime cuts have often to be got rid of at any price. The competent provision man will always try to reckon up his customer before using his knife. He knows that to show a side of bacon or a ham to a penurious person who has only a trifle to lay out would be imprudent, and he shows smaller tit-bits. Unfortunately, there are customers who will lead a young man to hack a side in pieces, and then make an offer for a couple of pounds, or perhaps none. The skilful tactician will always be really more anxious about selling up his pieces than cutting into fresh sides, ever remembering that the man who has the fewest pieces left about is the man who has the tidiest shop and makes the most money out of it. Prime cuts should always leave 3d. or 4d. per lb. profit. Some shops are always crowded with bits varying from ¼lb. to 2lbs. in weight, and pretty well all turning yellow! The daily labour in paring, scraping, washing, and wiping is not only sickening to many customers, but must be disastrous to the trader, no matter how cheaply he buys and how cheap his assistants. We cannot remember any slovenly provision man who ever made a fortune, but have seen some pitiful failures, caused by nothing else. When one sees a wasteful shop or an incompetent provision hand in charge we may feel pretty sure what the result will amount to. Of course, neighbourhoods differ in their requirements; the poor or "slum" districts must have low-priced provisions, and the retailer would make a great mistake to stock first qualities. Some shops

PROVISIONS—(continued).



WAYS OF CUTTING UP.

PROVISIONS—(continued).

can only sell coarse pieces and ends, and these are sometimes difficult to procure.

In fashionable neighbourhoods, however, and particularly in seaside towns, the coarser remnants may be purchased in sackfuls at a very low rate indeed. The reason is that visitors to these places must all have prime cuts, so that at many of the popular resorts there would be little difficulty in collecting 5 or 10 tons in a day at prices varying from 1d. to 3d. per lb. A large amount of this is also utilised by manufacturers of cheap potted meats, brawn, meat pies, etc.

have discovered themselves to be losing instead of making a profit.

Maggots.—These are the larvæ of many varieties of insects which feed on animal and vegetable substances. Perhaps the best means of protection against them is to dust the provisions over with ground black pepper and ginger, to examine them daily during the hot weather, and remove any traces of the obnoxious insects. (See *Hams.*)

As to *Butters*, the French rolls from Normandy and Brittany take first rank in London, and many of the fashionable resorts in the South of England, but Danish runs them close, and is more to be depended upon for purity and uniformity. The second class comprise

A GUIDE AS TO CUTTING UP AND SELLING A SIDE OF BACON OF 60 POUNDS.

Cost Price per cwt.	1 Fore Hock 61bs.,	2 First Two Ribs 3½lbs.	3 Neck Piece, 61bs.	4 Streaky, 9½lbs.	5 Back and Loin, 181bs.	6 Flank Ribs. 101bs.	7 Gammon, 41bs.	8 Corner Piece, 31bs.	Profit per side
s.	at	at	at	at	at	at	at	at	s. d.
46	3	5	6	6½	7½	4	6	6½	4 4
48	3	5	6	7	8	4	6	6½	4 9
50	3½	5½	6½	7	8	4	6	6½	4 3
52	4	5½	6½	7	8	4	6½	6½	4 1
54	4½	6	6½	7½	8	4	6½	7	3 10
56	4½	6	6½	7½	8½	4½	6½	7½	3 10
58	4½	6	6½	8	9	5	6½	7½	4 0
60	4½	6	6½	8	9	5	7½	8	3 11
62	5	6½	7	8	9	6	7½	8½	3 11
64	5½	7	7½	8	9½	6	7½	8½	4 3
66	5½	7	7½	8½	10	6	7½	8½	4 3
68	6	7	8	8½	10	6½	8	9	4 5
70	6	7	8	9	10	6½	8	9	3 11
72	6	7½	8½	9	10½	7	8	9½	4 4
74	6	7½	8½	9½	10½	7	8½	9½	4 2
76	6½	7½	8½	10	10½	7	8½	9½	3 9
78	6½	7½	9	10	11	7½	8½	10	3 9
80	7	8	9	10½	12	7½	9	10	5 3
82	7	8	9	11	12	7½	9½	10½	5 3

It is an excellent plan for the retailer occasionally to check his own and his men's methods of cutting, pricing, and weighing up by sketching out his ordinary cuts of bacon and hams, filling in the prices actually obtained for each, and comparing the total with the cost price. He must, of course, allow for knuckles, trimmings, bruises, etc., drying and draft in weighing out. Many

Irish, Norwegian, Finnish, or Swedish. Of course, there are a few high-class English dairies, but they seldom come into open market. There is really no regular supply of English butter, no standard as to quality, no uniformity, and, therefore, no regular market. English farmers apparently only care to supply it during about three months of the year. The foreigner can, and does,

supply it all the year round, and the quality is pretty uniform, and, therefore, both retailers and consumers have learnt what to order and what to expect. The foreigner also has the advantage of a better climate and cheaper labour. July and August are the best months for laying in stock, but it should be fairly salted to help it keep a few weeks. Thunder seems to turn it very soft, but it quickly goes firm again afterwards. It is a good plan, and saves much trouble, for small buyers to contract, if possible, with wholesalers for a regular quantity of a Danish brand at a fixed advance over the Copenhagen quotation. That quotation in kroner is fixed every Thursday, published in most of the papers same evening or next morning; so that invoices are easily verified, when it is remembered that 1 kroner equals 1/1½. Parties requiring, say, 5 casks a week may do better to buy direct through the Danish traveller, but payments will be found severely prompt. Sometimes two or three retailers co-operate in purchasing, each party ordering in turn, and dividing with the others. A provision man should always keep himself well posted as to prices, which are varying almost daily. He should also make himself acquainted with the rules and regulations of the local Wholesale Trade Associations. The members are apt to keep the rules very much to themselves, and some of the regulations are so very one-sided that in case of dispute, arbitration, appeal, etc., the buyer who is unfamiliar with the procedure stands at a great disadvantage, and finds many things out too late. Certainly, before any man signs a contract bringing himself under important rules and regulations, he should know what they are. Brokers and wholesalers can furnish these printed rules if they will.

Cleanliness is a very important matter to all dealers in alimentary products. Never have dirty hands. Have plenty of soda and water within easy access. Take care the blocks, boards, and other utensils are regularly and well scoured with *hot* water and soda.

Prunelline.—See *Bullaces.*

Prunes, Prunelloes, etc. — F. *Pruneaux;* Per. *Aloo;* Port. *Ameijas passas;* Sp. *Ceruelas passas.* (Also known as *French Plums*, *Imperials*, etc.)

The word "prune" is derived from the Latin *prunum* (plum), and may be more specifically defined as the fleshy varieties of the common plum (*P. domestica*) of firm texture, which are easily dried whole, either in the sun or by artificial heat, without fermenting at the pit.

In fact, the common English name for dried plums is "*Prunes*," but in French "*Pruneaux.*"

Prunelloes is a name generally applied to the larger, lighter-coloured, and finer-flavoured of the ordinary prunes, and mostly come from Tours.

In preparing prunes and prunelloes, the fresh-gathered ripe and thick-skinned plums are dried first in the sun till soft, sometimes spread on hurdles, and then about twenty-four hours in a slow brick oven, after cooling they are put in a warmer oven, and again a third or fourth time, till sufficiently dried. Great care has to be exercised that the skin be not broken, and that the fruit be not packed until all surplus moisture between the fruit has entirely disappeared, for it packed while damp it will mould in the packages. A skilled packer can tell by the sense of touch just when the fruit is fit for packing and when it is not. Some prunes may be noticed to have a smoky flavour, from having been dried over wood fires, especially those from Servia, Hungary, and Bohemia.

The Italian or Fallenberg prune is a well-known sort. It has a rich acid flavour and dark colour, with blue tint, and is nearly round. Bosnia and Herzegovina prepare 40,000 or 50,000 tons of prunes (var. *prunealina*) yearly. (See *Bosnian Plums.*) They resemble the Italian product, but are not quite so large, and are generally highly cooked.

Prunes are also extensively prepared in Germany from the *Quetsch* plum, which is best known as the *German prune.* These contain considerable acidity, and are preferred by some people; but the most widely celebrated

PRUNES—(continued).

prunes of all are the *Catharine* variety of French or "Imperial plums," which reach England from Bordeaux.

The tree thrives best in clayey and calcareous soils, and does not require loam of profound depth. The finest flavoured are prepared around the little town of Brignoles (Var), in Provence, where a very large trade in this fruit is carried on. They are known commercially as *Pistoles*, and *Pruneaux de Brignoles*, and comprise the *Pendrigon blanc* and the *Pendrigon violette*.

The difference between "Brignoles" and "Pistoles" is that although both are grown on the same bush the *pistole* is the selected plum, clear yellow in colour, freed from the stone and pressed flat and circular. These are considered very choice, and fetch high prices, while "brignoles" are the darker brown syrupy plums, often stuck together in lumps, and intended for use by pastry cooks.

The centre of the French prune industry, however, is at Agen, in the south-west. Immense quantities are put up in the fertile departments of Lot-et-Garonne, Dordogne, and Lot.

The *Prune d'Agen*, or *d'Ente* (date-grafted plum), grown in the valley of the Lot, has long been highly esteemed. "*Ente*," means grafted by a special method. In travelling from Avignon to Fumel through the valley of Lot, whole plains are seen covered with these grafted plum trees which furnish the famous *Prunes d'Ente*, and *Robe Sergent*. They are sun-dried and are exported to the remotest corners of the world. Other well-known varieties are the *Reine Claude*, *Mirabelle*, *Petit Damas* or French *St. Julien*, chiefly used in medicine, and grown in the valley of the Loire, whence also come the well-known "*Tours Prunes*," above referred to.

Lorraine produces an immense quantity of the kind known as *Quetschs*, which are one of the best for ordinary preserving, but their flavour is very inferior to their appearance.

Of late years large quantities of prunes from Servia have been imported into France, and re-exported as French at considerably higher prices. Indeed, the French appear to be doing this sort of thing with many other articles.

The processes employed for curing in Servia are very primitive, although plums are one of the chief resources of that country. Every grower cures them at his own orchard. The fruit intended for export is dried in a sort of oven with two compartments, one above the other. The first consists of a perforated wooden tray and receives the fruit, while the other serves as a fireplace, the success of the operation depending on the regulation of the heat. More elaborate apparatuses as used in France and America have been tried, but failed either on account of the expense or from the inconvenience of having to transport the prunes to and from the drying-place. The fruit intended for native use in Servia is simply notched, and left to dry in the sun. The export varies with the seasons; in 1895 it was about 30,000 tons, but in 1896 under 18,000 tons.

Spain and Portugal also prepare prunes, and California is already raising over 60,000 tons a year, a great portion of which are packed and exported in boxes of 10, 25, and 50lbs. each. These Californian are said to contain a much less proportion of stone and skin than French prunes, while the meat and saccharin matter is much greater. They are also said to be superior in flavour, and to keep better and longer without sugaring.

Oregon prunes are large and acid, of the Italian type. The *Dosch* prune is also large and acid, but as a rule people prefer the sweeter kinds. In France, at Agen, when the prune is rich, full, and thoroughly ripe, it is covered with a sort of glaucous powder called "flower," which greatly adds to its value as a table fruit. The fruit is usually gathered in the middle of the day, after the sun has dissipated the humidity of the night, and straw is generally spread under the trees to prevent the fruit from getting bruised, or dirty, through coming in contact with the soil. Sometimes a canvas cloth is held or suspended under the tree. Only such fruit as readily

PRUNES—(continued).

falls when the tree is shaken is gathered; as soon as harvested the fruit is taken to a building where it remains a day or two to mature. The prunes are then subjected to no less than three, and frequently four, distinct cookings of about six hours each. The first two at 113 to 122° are to crack the skin and evaporate the water. The others rise from 140 to 150°, but not above 160, and serve to dry the fruit and impart a certain brilliancy much desired by buyers. If the heat be too high it bursts and spoils the fruit. When sufficiently cured the fruit presents a firm and glossy skin, and the kernel inside the stone is also cooked, if not, it will ferment and cause decomposition. There are many different kinds of ovens (all French) in use, but the most used are the Bournel and the Marletean ovens. In some districts the French fruit grower first dries his prunes in an oven sufficiently to keep about two months without moulding; in the meantime they are sold to factories where they are cured in this manner:—After being graded by the use of wire screens, and the stone loosened and turned crossways by hand without bursting the fruit, they are placed in long hollow metal tubes, with a cap screwed on to keep them airtight. These tubes are then put into a steam drum, the steam is turned on, and they are cooked for a longer or shorter time, according to the size of the fruits, at a temperature of about 110°. They are then ready to be packed for the market.

In Provence more primitive methods are employed. Freshly gathered fruit is plunged into pots of boiling water where it remains until the water again arrives at boiling point. It is then removed from the boilers, placed in baskets and gently shaken until cool, when it is placed on long trays and exposed to the heat of the sun to complete the desiccation. The fruit loses about 60 per cent. in weight during this drying process. French prunes are divided into nine categories according to the Bordeaux classification:—

No. 1	represents	90	to	95	to the lb.
2	,,	80	,,	85	,,
3	,,	70	,,	75	,,
4	,,	60	,,	65	,,
5	,,	56	,,	58	,,
6	,,	50	,,	55	,,
7	,,	46	,,	48	,,
8	,,	40	,,	42	,,
9	,,	38	,,	40	,,

but the older classification is also still in use at some factories:—1, Pretin, over 125 to the lb.; 2, Petite rame, 120 to 125; 3, Rame ordinaire, 110 to 115; 4, Belle rame, 100 to 105; 5, Rame supérieure seconds, 90 to 95; 6, Rame supérieure first, or ½ choix, 80 to 85; 7, Premier choix, 70 to 75; 8, Surchoix, 60 to 65; 9, Impériale, 50 to 55; 10, Impériale fleur, 40 to 45. (These weights are reckoned in French pounds of 17 oz. 10¼ drams.)

Besides the ordinary glass jars and large tins, the best prunes are often packed in ornamental paper boxes, in hampers, or baskets made of white osier, weighing 6 to 10 lbs. each, the second qualities in quarters, and the third in puncheons or barrels, weighing from 1 cwt. to 4 cwt. each. When ready for market the fruit is pressed flat between two cylinders covered with indiarubber, and then packed by a special machine called a packer.

Bordeaux is the principal export centre of the prune industry. The French industry has, however, been on the decline these last three or four years, America proving herself a formidable competitor. The system of drying the fruit in the latter country has the best results and several French firms have recently adopted the American method and found it to answer admirably.

Prunes are a favourite fruit in manufacturing districts, both for culinary purposes and dessert. They are considered very nutritious, demulcent, and slightly laxative. Stewed in water, they form a good remedy for costiveness and feverishness, also the liquor as a drink. New season's pack begin to arrive in England towards the latter end of September. The qualities are mostly inferior after a wet summer, and the

best of them high in price. English plums would not do for drying into prunes, they are too watery, and even the largest of them, if dried, would really come out "all skin and bone." It must be remembered that in warmer climates the fruit is partially dried and prepared on the trees as it grows in the hot sunshine, thus becoming firm and fleshy.

Importers: Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool.

Prussian Blue.—Sometimes called Berlin Blue, Royal Blue, etc. Genuine Prussian blue is a fugitive colouring substance or pigment, obtained by mixing yellow prussiate of potash with a solution of sulphate of iron.

It is prepared by boiling the washed Prussian blue in a solution of the salt. The proportions may be gathered from the following recipe: Add seven pounds of crystallised sulphate of iron gradually to a boiling solution of eleven pounds of cyanide of potassium. After two hours standing the precipitated blue is filtered off, washed with boiling water until the wash water begins to show blue, and then dried. The colour shows a very fine shade, and is absolutely soluble in water. The colour is precipitated from solution by adding sodium sulphate. Oxalic acid, potassium oxalate and tartrate and oxalate of ammonium are four other good solvents for Prussian blue; and if the pigment is dissolved in any one of them, sodium sulphate reprecipitates the Prussian blue from the solution in the soluble form. If, however, a solution of Prussian blue in oxalic acid is boiled or treated with sulphuric acid, the Prussian blue is precipitated in its insoluble form.

It was called Prussian blue from the fact that it was accidentally discovered at the beginning of the 18th Century by a Berlin chemist, who, having successively thrown upon the ground several liquors from his laboratory was much surprised to see it suddenly stained with a beautiful blue colour.

Recollecting what liquors he had thrown out, and observing the same effects from a similar mixture, he set about preparing the blue for the use of artists, who found that it might be substituted for the more expensive ultramarine, and have used it accordingly ever since.

Besides being used for laundry purposes, it is also used in dyeing, and in tinting paper.

The name Prussian blue is also often given to mere blue ochres.

Ptarmigan, or Wild Grouse.—A name for the wild grouse or Muir fowl (*Lagopus mutus*) found in most of the wild, healthy, mountainous districts of northern Europe, Asia and America, descending within the range of vegetation to feed on berries, buds of trees, insects, etc. They have feathered feet, and their plumage, ash-coloured and white in summer, turns quite white in winter, like certain other birds of the same genus.

Ptarmigan are less esteemed than red or black grouse. Our markets in February, March, and April, are mostly supplied from Norway and the United States. A considerable quantity of ptarmigan is canned at Telemarken, in Eastern Norway. The flesh has sometimes a bitter flavour imparted to it by the bird's food.

Pudding Spice or Mixed Spice.—This should be bought carefully by sample and not merely by name. Some kinds are not worth a quarter the price of others. A good quality is made by mixing various quantities of the following spices when ground:—Cinnamon, cloves, nutmegs, mace, and sugar, etc.; but in low qualities the cheapest ingredients predominate. The seventeen different mixings on the next page will indicate how they are generally made up.

Samples should always be obtained before buying, as very rubbishy mixtures are often sent to grocers as "pudding spice," or "mixed spice."

Gardner's patent "Rapid" Sifter and Mixer, freely used for above. Prices from 50/- to £100. Catalogues from Wm. Gardner & Sons, Engineers, Gloucester.

Qualities.	Caraway.	Cassia.	Cassia Lignea.	Cinnamon	Cinnamon Chips.	Cloves.	Clove Stems.	Coriander.	Ginger.	Mace.	Nutmeg.	Pimento.	Rice Flour.	Sugar.
A	7	—	—	—	—	3	—	14	—	—	—	—	14	9
B	4	—	—	—	—	1	—	4	—	—	—	—	3	1
C	1½	1	—	—	—	2	—	3	—	—	—	—	10	—
D	2	—	—	—	—	6½	—	2	—	—	½	—	11	4
E	2	—	—	—	—	—	—	4	—	—	—	2	6	1¾
F	—	5	—	—	2	—	1	2½	—	—	—	2	—	2
G	1½	7	—	3	—	2½	—	½	½	2	—	—	25	7
H	7	—	—	—	—	—	—	14	—	—	—	7½	21	6
I	—	—	—	—	—	1	—	½	—	—	—	½	6	—
J	—	—	—	—	—	—	—	28	½	—	—	7	21	—
K	7	—	10½	2½	—	—	—	7	—	—	2½	—	14	14
L	1	—	—	—	—	—	—	1	—	—	—	7	7	1½
M	¾	3¼	—	1½	—	1¼	—	¼	¼	1	—	—	12½	3½
N	3½	—	—	—	—	—	—	7	—	—	—	3¾	10½	3
O	2	—	—	—	—	—	—	3	—	—	—	2	1	—
P	¼	—	—	—	—	—	—	¼	—	—	—	½	15	3
Q	2¼	—	—	2½	—	—	—	—	—	1	½	—	—	2½

Pu-erh Tea.—(See also *White Tea of Persia.*)—A kind of tea which forms an article of commerce in China, near the frontier of Burmah, and said to be used as an aid to digestion. It appears to be gathered from a plant not very different from the wild Assam tea-plant. It is chiefly produced in the province of Yunnan, and some of the best is made into balls as big as a man's head for the Court of Pekin. Other qualities are made into cakes, well known all over the West of China.

Pulped Fruit, or Fruit Pulp.—(See also *Jams.*)—These are terms applied to fruit which has been prepared for preserving. The fresh gathered fruit is smashed up and boiled with only about half the quantity of sugar required for making it into a perfect jam.

It is often "pulped" in this way during the busy season of fruit-gathering, and then stored away in large casks, tins, or other vessels, so as to be kept air-tight till required for sale, when it is reboiled up with the remainder of the sugar.

This method saves labour at a busy period, and also half the cash outlay for sugar, but such jam, however coloured and otherwise manipulated, is never so nice and flavoury as jam made at one operation while the fruit is fresh.

Pulque. — (See also *Mescal.*)—An acid unrectified wine produced by fermentation, very popular and important beverage throughout Mexico and other parts of South America.

No drink has a stronger hold on any nation than this on Mexicans, peons, men, women and children; although the Spaniards in Mexico do not drink it. The city of Mexico has a population of about 350,000, and at least 250,000 of these use pulque in preference to water or any other drink. The consumption in that city alone exceeds 150,000 quarts daily.

This fermented liquor is made from the sap or juice of the Maguey, *Agave Americana*, or Century plant, which both grows wild and is extensively cultivated in Southern Mexico. The leaves are long and pointed with prickles along the edge, and when bruised are commonly made into a stiff and hard paper, also used as thatch. A kind of thread is also made from the fibrous texture of the leaves, and rough needles and pins

are made of the pricks. Although this variety of the agave grows in most of the hot countries, its greatest perfection is reached above an altitude of 5,000 feet, whereas the *Sisal agave*, or *henequin*, thrives best in the lower and hotter lands.

The pulque agave is from 5 to 15 years old (but not a century, as some pretend) before it flowers, and when the flower-stalk is about to burst forth from the centre of the plant the bud and upper leaves are all cut or scooped out, leaving a large cavity or trough, into which a sweet and mucilaginous juice begins to rise at the rate of about two gallons a day, and continues to flow for perhaps six months.

This juice, hydromel, or "*aqua-miel*" (honey water), which tastes something like spruce beer, is, by the aid of a rude syphon made of a gourd or calabash, with a hollow horn tip, filled two or three times a day into pig, sheep, or goat skins, and carried on mule-back from the plantations to the town.

While fresh it is like green water, but some carbonic acid soon forms, and causes it to turn milky, when it somewhat resembles cider in taste.

It quickly ferments, and acquires a strong flavour, not, as some writers have stated, from the skin reservoirs in which it is carried, but from milk and rennet. The amount of carbonic acid is so great, and the decomposition so rapid, that in a few hours it would become vinegar if not closely watched; but milk and rennet are added, and these induce a certain amount of putrescence. This flavour may be said to be agreeable only to the "educated" palates of the natives, among whom, for ages past, *pulque* has had the reputation of possessing important medicinal virtues, especially as a cure for scurvy.

The putrid flavour is by some removed by means of a chemical. Some housekeepers add white sugar, others the juice of oranges.

In the pulque shops (*pulquerias*) the beverage is often made intoxicating to a maddening extent by the addition of marihuana.

Scores of drinks are concocted in Mexico from pulque, and the interested reader will find a good description of several in the "Society of Arts Journal" of September 3, 1886.

Pulse. — A general term for the edible seeds of any leguminous plants which are cultivated as field or garden crops—that is to say, seeds which grow in pods, such as peas, beans, lentils, ground nuts, vetches, etc. These are the most nutritious of all vegetable substances, being distinguished by the large amount of nitrogen they possess, 1lb. of peas, lentils, or beans containing about 255 grains, while bread contains only 89, potatoes 24, rice 70, pearl barley 91, maize 121, oatmeal 140.

Pulses are best used along with foods that abound in starch or fat, such as "beans and bacon," etc. While most kinds of pulse are thus nutritious, stimulating, and heat-giving, they are somewhat indigestible, and often occasion flatulence. (See pages 525 and 694.)

Pulverised Sugar. — Refined sugar ground to a fineness intermediate between that of granulated sugar and confectioners' sugar.

Pumice Stone. — Da. *Pimpstein*; Du. *Puimsteen*; F. *Pierre-ponce*; Ger. *Bimsstein*; It. *Pietra pomice*; Port. *Pedra pomes*; Rus. *Penza*; Sp. *Piedra pomez*; Sw. *Pimpsten*.

Pumice-stones are light, spongy, but vitreous stones, of which there are several kinds, some so buoyant—especially the white stone—as to float on water. They mostly come from the Italian Island of Lipari, in the Mediterranean, which is mainly formed of lava accumulations ejected from volcanoes now extinct, but a superior quality has recently been discovered near Auckland, N.Z., which bids fair to revolutionise the trade.

Pumice may be called volcanic froth, or a porous, spongiform lava.

The spongy, porous, cellular variety—the only one exported from Messina (nearest port to Lipari)—is said to owe its peculiar buoyancy to the gas or steam

which escaped while the lava was in a state of fusion.

It is usually of greyish colour, but sometimes yellow, brown, or even black, and contains some 60 or 70 per cent. of silica.

Pumice-stone, either in the lump, granulated, or ground to fine powder, is chiefly employed by artisans for smoothing and polishing wood, ivory, metal, glass, marble, slate, and lithographic stones; also parchment, vellum, and some kinds of leather. Calcined pumice is also being extensively used as an insulator, being lighter, cleaner, and free from organic matter, and it cannot fire.

Leghorn used to be head of the pumice trade, and the Leghorn grinding is still the best; but several of the manufacturers have transferred their works to Lipari, and the Leghorn industry is declining. Hull, Liverpool, and London are the chief ports of arrival, but it comes also to Newcastle, Harwich, Boston, and Bristol. As will be readily understood, the chief cost is in freight, handling, and warehousing; but these are heavy, and in England pumice is often adulterated with lime.

Pumice-stones are usually sized as:—"Lumps" (size of human head), "double fist," "fist," and "smalls."

Pumice Powder is graded according to number of holes to the inch, lineal, thus:—Finest grade, 180 holes to inch; fine, 120; small, 90; smaller, 60; and smallest, 50 holes to the inch lineal. It may be bought white and fine as flour for 2/6 per cwt., but the best sells at 25/- cwt.

Apply to C. Windschuegl, 1 Leadenhall Street, London, E.C.

Pumlows or **Pomelions.** — See *Shaddocks.*

Pumpernickel.—A species of bran bread, which forms the chief food of the Westphalian peasantry. The word is often used elsewhere as a term of contempt, as is oatmeal porridge in this country.

Pumpkins. —F. *Citrouilles, Potirons;* G. *Kürbis;* Port. *Abóbaras.*

The fruit of the *Cucurbita pepo*, a species of gourd. The pumpkin is a smooth fruit, of globose or pear-like shape, varying in size from a few ounces to a hundred pounds in weight. It is cultivated in gardens and fields nearly everywhere. One variety is dark green when ripe, another with green and yellow stripes, and a third kind turns from green to a bright orange colour. Pumpkins are not eaten raw, but cooked in many ways—in pies, with sugar and spice, or sliced, boiled, or fried with oil, butter, gravies, soups, etc. The edible part is the fleshy layer, of an inch or two in thickness, beneath the rind; but cannot compare favourably with the vegetable marrow and analogous plants. In America it is fed to cattle, also made into "Pumpkin Pies." The name of Pumpkin is often wrongly applied to varieties of the *Squash.* (See also *Maize Bread.*)

Punatoo.—A Cingalese name for the preserved pulp of the palmyra-palm fruit. It is the main food of the poorer classes of the peninsula of Jaffna during a great part of the year, and is made into soups, etc.

Punch. — G. *Punsch.*

This once favourite liquor was originally introduced into England from India, and derived its name from the Hindoo word "panch," meaning *five*—the number of ingredients used in its preparation, viz., arrack, tea (liquid), sugar, water, and lemon juice. It has, however, long been made with alcohol and water, or rum, as a basis, and flavoured with lemon or lime juice, spices, sugar, etc. Sometimes made from wine, ale, tea, brandy, milk, etc. Hence rum punch, milk punch, etc. A popular recipe used to say:—1 part of *sour*, 2 of *sweet*, 4 of *strong*, and 8 of *weak*—the main object consisting in producing a rich liquor, in which no special ingredient may be distinguished.

To-day it is met with in two forms: as a drink, spirituous or not spirituous, or frozen to a mushy consistency.

Puncheon.—This is the name of a cask rather than a definite measure, and

in buying or selling it is best to state approximately the number of gallons, or weight. A puncheon of brandy ranges from 70 to 120 gallons. An Admiralty puncheon is 72 gallons, and in some places a puncheon of rum is fixed at 91 gallons. Some tables make the spirit puncheon less than 70 gallons, and that for ale about 73 gallons. *Mair* gives a puncheon of wine as 84 gallons, and one of prunes as weighing 10 to 12 cwts.

Punnets. — These are small wicker or splint baskets, broader and shallower than "pottles," and are used by fruiterers, costermongers, etc., for displaying small quantities of flowers, sea kale, and fruits, such as strawberries and other ripe, fresh sorts. The fruit in them also passes from the garden to the consumer without unnecessary handling. Those for fruit are sold ½lb. size, about 7/- a gross; 1lb. size, 7/6; 2lbs. size, 9/-. Made in Kent during winter.

Punnets are also made in white cardboard, round, flat, or oblong in shape, for holding ¼, ½, or 1 lb. portions of butter, cheese, etc. Prices, 1/9, 2/6, and 2/9 per 100. If parchment, lined and grease-proof, they cost about 6d. per 100 more. They are mostly of foreign make; and, fitting closely into each other, they pack away in little room, and may be kept clean for years.

Some fruiterers, provision dealers, etc., using these punnets, advertise their names thereon with india-rubber stamps.

Puree, Potage Crecy, etc. — *Purée* is a French word, denoting any vegetable or meat which has been prepared by boiling or simmering till soft, and then passed through a small sieve or colander. Meat is often beaten with a pestle in a mortar, and then rubbed through the sieve. When such materials have been so reduced to a smooth pulp, they are called a "purée." Hence it means a thick soup or porridge, prepared from vegetables. Ordinary pea-soup is a familiar example of a "purée of peas."

Potage Crécy is French for "carrot soup," prepared in a similar way, and retailed in tins (1lb. size, about 11/6 a dozen).

Putty. — F. *Mastic*; Port. *Mastica*; Sp. *Potea*.

A kind of pasty cement made of carbonate of lime, or whiting, and boiled linseed or other drying oil. The whiting, being dried, pounded, and well sifted, is stirred into the oil, and mixed in a putty mill to the consistency of dough. It is sometimes coloured red, with Spanish brown. Used for fixing panes of glass in window sashes, and for levelling up holes and cavities in wood before painting, etc.

Good putty should be water-tight. Recipes.—(1) Linseed oil putty, prepared by boiling 8 parts of linseed oil for half an hour with 12 parts of litharge; and incorporated by stirring with 88 parts of slaked lime. The surface to be treated (crevices between the stones or flat roofs, or in closets, etc.) should be first coated with linseed oil varnish. (2) Rosin putty, for wood that is exposed to the wet, is made from 100 parts of shellac and 45 parts of strong spirit of wine. For water pipes a very useful putty can be prepared from 10 parts of rosin, 10 parts cotton wool, 10 parts of calcined lime, and three parts of linseed oil varnish. (3) The so-called "marine glue" meets with very extensive employment. This is prepared from 10 parts of caoutchouc, 120 parts of rectified petroleum, and 20 parts of asphaltum. It is applied hot, and should be carefully melted by heating with boiling water; it is perfectly water-tight, and forms at the ordinary temperature very tough cement, suitable for metal, wood, glass, stone, etc.

Putty Powder, Potee, or Polisher's Putty. — This is a crude peroxide of tin, obtained by exposing metallic tin in a reverberatory furnace, and raking off the dross as it forms. It is afterwards calcined until it becomes whitish, and is afterwards powdered. It is used for polishing glass and japan work, and to colour opaque white enamel.

Pygnolia Nuts. — See *Pignolia*.

Pyretic Saline. — *Pyretic* is the Greek word for *feverish*, hence Pyretic

Saline is the name of a supposed remedy for fever.

Pyroligneous Acid. — F. *Acide pyroligneux, Vinaigre de bois;* G. *Holzsäure, Holzessig.* (See also *Vinegar* and *Acetic Acid.*)

Pyroligneous acid (also called *Wood Vinegar*) is that kind of acetic acid which is derived from wood, saw-dust, spent dyewood, etc., by burning the material, distilling, and then purifying it, in distinction to the acetic acids obtained from other sources.

Of course, this pyroligneous or wood acid has much the same chemical composition as the latter, but has no connection with alcohol. It is in its crude state very impure, from being mixed with tarry matter, creosote, wood spirit, and other irritating ingredients, and from these it has to be purified by complicated chemical process before the acid can be used as *vinegar*, but when properly purified it is preferable to the other varieties of acetic acid, on account of certain essential oils which it contains in small quantities, and which render its antiseptic properties more active.

Like the acid made from the acetate of soda, this pyroligneous acid, in conjunction with water, has almost acquired the prescriptive right to be called vinegar, although among analysts and judicial functionaries the definition of vinegar, now meeting with the widest approval, is that vinegar is an acid liquid only produced by the *alcoholic and acetous fermentations* of a vegetable juice or infusion.

This description includes vinegars prepared from malt, wine, raisins, cider, etc., but excludes acetic acid produced by the distillation of wood.

Pysse.—A name for the soft wheat of India.

Pythagorian Beans. — These are the seeds, or nuts, of several species of *Nelumbo*, aquatic plants, once very popular as food in ancient Egypt, but now much neglected. In India they are eaten raw while green, and roasted or boiled when ripe and hard. The tuberous roots resemble the sweet potato, and are starchy, and the root-stalks, when boiled, are farinaceous and agreeable, and employed as food by the Osaga and other Western Indians.

Q

Quack Medicines. — See *Patent Medicines.*

Quart. — An imperial measure of capacity, often written "qt.," and equal to two pints, or the fourth part of a gallon. "Quart bottles," so-called, or "Wine quarts," contain, as a rule, only one-sixth of a gallon, and not always so much.

In Gloucestershire and Leicestershire, 3lbs. of butter are called a quart; and in the Isle of Man 7lbs., which is the fourth part of a quarter of a hundredweight.

Quarter. — A weight generally written "qr.," equal to 28lbs. avoirdupois, or a *quarter* of a hundredweight. As a measure of capacity, a quarter is equal to 8 bushels, or two sacks.

Quartern.—In dry measure, the fourth part of a peck. In liquid measure, it is the fourth part of a pint. As a weight, a "quartern loaf" of bread should weigh 4lbs.

Quass.—A Russian mixture of rye-flour and warm water, kept by the fireside till sour, and then drunk as beer.

When it becomes too sour to drink, the Russians use it as vinegar.

Quetsch.—A spirituous liquor made in the Vosges mountains from plums.

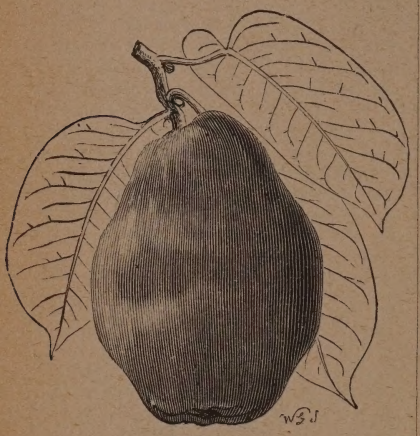
Quicksilver Soap.—See *Mercurial Soap.*

Quillaya Bark, or **Panama Wood** —The Chilian name for the bark of the tree *Quillaia saponaria* (soap tree). With water, this bark produces a lather

like that of soap, and in South America it is so used in washing woollens, silks, etc.

Quince Jelly.—Du. *Kwepeer;* Da. *Qvæde;* F. *Coing;* G. *Quitte;* It. *Mela cotogna;* Port. *Marmelo;* Sp. *Membrillo.* (See also *Alva.*)

A delicious jelly obtained in the ordinary way from the fruit of the *Cydonia vulgaris*, a small hardy tree growing six to eighteen feet high, with crooked, spreading branches, at the end of which it bears a large, single flower, either white or whitish pink. The tree is cultivated in most of the temperate climates, especially in the United States, where it is also a favourite stock on which to graft or bud choice kinds of pears.



QUINCE.

It may be easily and cheaply grown in any deep rich and well-drained soil.

The quince, like the *Medlar*, is a species of apple, but rather larger, and pear-shaped, and when ripe it is of a golden yellow or ruddy colour, and covered with a cottony kind of down. Each fruit contains five cartilaginous cells, in each of which the seeds are arranged in two series to the number of eight or upwards, covered with a mucilaginous substance. It also emits a powerful and rather peculiar perfume, but, being very hard and acrid while raw, the fruit is rarely eaten till cooked. Marmalades, jellies, syrups, fruit pastes, and liqueurs are, however, prepared from it. Its numerous seeds themselves give off a large amount of mucilage when boiled, which is used in medicine and in making *Bandoline*, etc.

Quince Marmalade.—This excellent preserve is the main product obtained from the quince, which is not a table fruit, and, as above shown, is never used raw, on account of its hardness and austere taste, although extremely fragrant when ripe. The ancient Greeks and Romans considered it to be possessed of special health-giving properties.

When boiled, stewed, or baked with sugar, it becomes very palatable, and it is mainly used for flavouring or preserving with other fruits.

A little of the pulp is often added to apples in making pies, etc., to improve the flavour. A drink resembling cider or wine is also made from the quince by fermenting together a pound of sugar and a pound of juice.

The best variety of quince is that known as the apple-shaped quince, and resembles the Pearmain apple. This kind is largely cultivated in the United States. The fruit ripens about November.

Quinine, or **Jesuits' Powder.**—This valuable alkaloid, known as Sulphate of quinine, *Ague salt*, etc., is a white, floury substance, now largely obtained from the Peruvian bark tree, an evergreen, which belongs to the natural order *Cinchonaceæ*. There are several species of this tree, and they closely resemble the laurel.

The *barks* are known by several names, such as Peruvian bark, Jesuits' bark, Quina, Cinchona, etc., the latter being named after the Countess Ana del Cinchon, the wife of a Spanish Viceroy of Peru, whose cure of a fever by it is said to have first brought Peruvian bark into repute, although the medicinal properties of the tree have been known in Peru since 1638. It became

QUININE—(continued).

known in Spain as "*Polvo de la Condesa*" (the Countess' powder). The trees grow abundantly in the West Indies, Ceylon, and South America, particularly in Peru, and seem to prefer mountain slopes. They bear large opposite leaves, of a deep glossy green colour, relieved by delicate pink lines, and white panicles of fragrant flowers, very like lilac blossoms, white, rose, and purple in colour; but the Jamaica Cinchona plantations now yield by far the most superior bark, and this has latterly been taking a leading position in the markets. Some of these Cinchona trees are very large, but the best bark comes off the smaller ones, which appear as shrubs after the large trees are felled.

Cinchona cultivation in India is also rapidly progressing, especially in Madras, Mysore, and Bengal, the quinine being manufactured by what is known as the fusel-oil process, and the product is said to be of the highest possible purity.

The trees are cut down close to the ground, and peeled in the dry season, and the bark is then carefully dried, a quilled form of the pale inner bark being acquired in drying. This bark, in pieces 8 to 10 feet long, is then made up into packages, called *Seroons*, of various sizes from 100 to 200 lbs. each, which are closely wrapped in woollen cloth and afterwards in hide, and sent to the coast on mules for export. The sulphate of quinine is finally extracted with spirits, after the addition of lime, or by the action of alkali. The roots of the trees also are powdered for the quinine they contain.

Ceylon bark yields from 2 to 4 per cent. of quinine sulphate, Java bark 4 to 9, and even up to 13 per cent. Immense quantities of suitable barks now come from Java, and the process of extracting the alkaloid now occupies only about 24 hours.

The more recent cultivations of bark in Peru and Bolivia are of special importance, and these barks yield 4 to 5 per cent. of the sulphate.

Quinine *sulphate*, or the art of preparing it, was only discovered in 1820, by Pelletier and Caventou.

The consumption now amounts to about 200,000 kilos annually, and more than half of it is consumed in the United States.

It is occasionally adulterated with powdered *gypsum* (Plaster of Paris).

The enormous demand for the bark may be estimated from the fact that in one year Pelletier alone used 200,000lbs. in the preparation of the sulphate of quinine. The best barks are heavy, and of an orange colour; the worst is white. The leading varieties found in the druggists' shops are denominated the *pale*, the *yellow*, and the *red*. The first of these is now comparatively little known in commerce, and is also known as *Crown* bark; it reaches Europe in chests, covered with skins, and containing about 200lbs. The pieces are about nine inches in length, smell trifling, slightly aromatic, taste acidulous, pleasantly bitter, rather astringent, and some scarcely 1-10in. in thickness. The red bark comes in chests of 100 to 150 pieces. These are of various sizes, and usually flat, smell weak and peculiar, taste bitter, but more astringent and nauseous than in the pale bark. The yellow bark is the most employed and esteemed in Europe. The tree grows at an altitude of 7,000 feet in the mountains of Loxa and Quito. The bark comes in chests of from 90 to 100 lb. bundles, consisting of pieces about ten inches long, some quilled, but the greater number flat. The epidermis is greyish-brown, often as thick as the bark itself (half an inch). The inner bark has a yellow colour, passing into orange. In odour it resembles the pale variety. The taste is more bitter, and scarcely at all astringent or rough.

Largely employed in making powders, pills, and liquid mixtures, wines for cases of fever, influenza, lack of appetite, depression of spirits, malaria, etc.

Quinine is a tonic and stimulant of the highest order, and has this advantage over other stimulants, that, if taken in moderation, its use does not become an

absolute necessity. The price of the sulphate used to be about 16/- per oz., but now it is only 1/2 to 1/6.

Quinine Wine.—F. *Vin de Quinquina.*

According to the British Pharmacopœia, this should be a compound of twenty grains of sulphate of quinine, thirty grains of citric acid dissolved in a pint of sherry or orange wine, so that each fluid ounce may contain one grain of quinine. The acid is first dissolved, and then the quinine, in the wine, and the whole is afterwards digested three days, and finally filtered. Dose, ½ to 1 oz. for an adult, or one and a half to two tablespoonfuls.

Quinine is one of the most valuable drugs, and is considered the best specific for malarious fevers. It is inodorous and extremely bitter. It does not dissolve in water, but will do so in spirits or wines.

Alcohol to the extent of 10 to 12 per cent. is permitted, and some makers add about 18 grains of salicylic acid to each quart, but if sold without a spirit licence this wine, like all other medicated wines, must contain sufficient drug to render it too nauseous to be used as a pleasant beverage.

Druggists generally use Cape or raisin wine, from its being cheaper than sherry, and acting equally well as a solvent for the quinine.

In France, the wines used for the purpose are Madeira, Malaga, or Frontignan. (See Byrrh.)

Quinoa Seed and Flour.— This grain is not often met with in England, but it is extensively cultivated on the high tablelands of Chili and Peru. There are two varieties of it—the sweet and the bitter—and both grow at elevations rising to 13,000 feet above the level of the sea, where both rye and barley refuse to ripen.

The plant grows something like a turnip, running to seed 4 to 6 feet high. The seeds are small and roundish, and furnish the principal food of many thousands of people who inhabit the above regions. The flour made from quinoa seed is very similar in its constituents to oatmeal, and is consequently very nutritious.

Quinsey Berries.—See *Black Currants.*

Quintessences.—A term invented by the alchemists to represent an alcoholic solution of the active principles of organic substances concentrated or purified to the utmost degree. It is still occasionally employed in perfumery and the culinary art.

R

Rabbits, Tinned, Frozen, etc.— Da. *Kanine;* Du. *Konyn;* F. *Lapins;* G. *Kaninchen;* It. *Coniglio;* Lat. *Lepus cuniculus;* Port. *Coelhos;* Sp. *Conejos;* Sw. *Kanin;* W. *Cwning.* (See also *Preserved Provisions, Tinned Meats,* etc.)

Rabbits or Conies are well-known rodents of the same species as hares; but, unlike hares, they are gregarious in habit, living in colonies, warrens, or burrows, and when in the open air warn each other on the approach of danger by thumping the ground with their hind feet. The young are also born blind and bare, and they breed six or eight times a year, having each time four to eight young ones. It is said a single pair can be multiplied in four years into 1,250,000.

Their flesh is white, and remarkable for its small amount of fat, and is more often used as a change than as a staple article of food. It is, however, considered equally nutritious as that of the hare, but very different in taste and texture as well as in colour.

Rabbits were introduced into Australia for food about 1850, and into New Zealand in 1860, when seven rabbits were turned loose on a farm near Invercargill. They have since multiplied so enormously

RABBITS—(continued).

as to become a pest, and seriously affect the farming and stock-raising industries.

The Victoria Cabinet has spent about half a million in killing them on the Crown lands. As for the money spent by private individuals, it is incalculable, one owner spending over £150,000 upon his estate in killing them. Over a million rabbits are sold yearly in Melbourne market alone for eating purposes, and there are at least thirty-eight millions of acres infested with them in the single colony of Victoria, principally in the west and north-east.

They seem to prefer salt-bush soil to burrow in, but will not eat the leaves unless driven to do so by thirst. Several large factories have long been engaged canning rabbits for export to England, but, as with tinned mutton, there exists in this country a foolish timidity or prejudice against tinned rabbits. A moment's consideration, however, should convince the most sceptical that there is no inducement for the canners to use any but the finest rabbits, these being far more plentiful and cheaper than *cats*.

Parenthetically, it may surprise many to know that to-day in Spain cats are actually eaten in preference to rabbits, and fetch higher prices. Indeed, a housewife in Old Castile buying a tom-cat ready dressed for cooking would consider herself basely cheated if at table it proved to be a rabbit. (Needless to say, Spanish cats are carefully kept indoors at night.)

The Surveyor-General of Queensland recently issued a report on the rabbit invasion, and it is plain that the furry and prolific little rodent is a more formidable public enemy to Queensland than would be a fleet of hostile ironclads. The Queensland rabbit seems to be quite a new variety, with extraordinary digestive powers and a malign intelligence to which only the despairing blasphemy of a Queensland stock drover can do justice. It flourishes in times of drought, and grows fat while cattle and sheep perish of dire hunger. Queensland is being grid-ironed with rabbit-proof fences. One running from Darling Downs to Eyre Creek is 1,100 miles long; and no doubt these fences, when skilfully constructed, do arrest the rabbit wave, and the rabbits, unable to go forword and without wit enough to turn back, perish in vast numbers. In some districts the southern side of this great barrier is "white with the bones of millions and millions of these rabbits"; but the young rabbits often contrive to get through the meshes of the fence, and quickly breed into new hosts, tunnelling the sand-hills till they are mere traps, and eating off the pasture as with innumerable scythes. The rabbit, in a word, leaves science itself bankrupt.

In one year the Government of New South Wales paid for 27 million rabbit-skins, and yet there were more rabbits skipping about than ever.

Since 1883 one colony alone has spent over a million sterling in the rabbit war; 15,000 miles of wire fencing were erected, one fence alone running 407 miles and another 346.

The Crown in New South Wales has upon its hands seven million acres of lands abandoned to the rabbit pest. They seem to get fat where ordinary stock would die of starvation. A few years ago a reward of £25,000 was offered to any one who could suggest a really efficient method of getting rid of the evil, but, although 2,000 schemes were received, not one was satisfactory, and the offer was withdrawn.

In *South Australia* the annual injury amounts to about half a million sterling.

There is, however, now a prospect of turning the rabbits to a profitable use, and it is possible that their numbers will be overtaken. By the facilities which freezing and cold storage afford, an immense and increasing quantity now come to Europe from various points, and notably from the Marlborough district of New Zealand.

Instead of poisoning rabbits, they are frozen for the home market and eaten. The extent of this new way of getting rid of the pest is scarcely understood.

One exporter alone in New Zealand receives from rabbiters between 15,000 and 20,000 rabbits a day, for which he

pays trappers as wages £1,000 a week. This same exporter has 24,000 traps set, employing 500 persons to look after them. Last year, 1899, he exported 700,000 rabbits, and he expects to send away 1,500,000 carcases this season. Another exporter says he has sent away 250,000 rabbits during this season, and that his wages account with the men employed averages £700 a week. Another exporter estimates that the output of rabbits this season will be about 6,000,000, and another person in the business estimates the number at 5,000,000. Taking the rabbits at 3d. per head, the sum to be distributed among trappers will be about £60,000. The total return from this export (the price of skins included) is estimated to be nearly £150,000. It takes twenty railway trucks of timber to make the boxes to carry the rabbits to market, and the charge for railage will be about £500. But the rabbit is not exterminated yet, nor is he likely to be when such an enormous export trade depends upon his existence.

The export in 1894 was 25,241, value £464; 1895 was 53,654, value £1,046; 1896 was 357,730, value £7,021; 1897 2,229,050, value £46,398; 1898 was 4,251,596, value £93,836. In 1899 the weight of Australasian frozen rabbits was 9,000 tons (say, 8,000,000 rabbits), equal to 420,000 Australian sheep.

Those interested in the business should apply to The Australian Frozen Rabbit, Poultry, and Produce Syndicate, Ltd., 9 Gracechurch Street, London, E.C.

It appears as though we sent Australia the rabbit as a curse, and that she is now returning it as a blessing, in the shape of food, hats, rugs, and cloaks for millions of people. The importance of the tinned rabbit trade to the Colonies is evidently two-fold: it is itself a source of profit and at the same time ridding those countries of a noxious pest.

The tins may vary 2 or 3 ozs. in weight, but it must be remembered they are not sold by weight, so long as each tin contains a full-grown rabbit.

The annual slaughter in Great Britain is supposed to reach twenty millions, and seventy millions in France. The annual exportation from Belgium averages five millions. "Ostend" rabbits are a much finer and larger breed than the English, some being as large as hares, and their flesh very tender and delicate. The importation of these into Great Britain exceeds three millions, but the wholesale trade in them is almost a monopoly in the hands of about half a dozen firms.

In preparing rabbits for market it is best to snare or trap them, break their necks, remove the entrails at once, and pack in crates of three dozen each. The best lures for them are Rock Salt and Anise Seed Oil.

The Jews were forbidden to eat rabbits and hares, but the reason is not known.

Sold by Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool, in tins only.

Rack.—See *Arrack*.

Raddle, Reddle, or Red Ochre.—(See also *Ochres*, *Venetian Red*, etc.)—Sometimes called Reddle, Ruddle, etc. It is a kind of red chalk, or earthy variety of hematite iron ore, and is found in several parts of England, especially in Somersetshire, Cumberland, Yorkshire (near Rotherham), and in the Forest of Dean. This sesqui-oxide of iron is sometimes found soft and clayey, and sometimes of stony hardness; also of various shades, from a pale brick-red to bright vermilion.

Used for making into crayons for drawing, marking sheep, scouring brick floors, etc.

Radishes. — These crucifers are native of China, and distinguished in botany as *Raphanus Sativus*. They have been in cultivation upwards of three centuries, and are sub-acid and tender while young, with little or no starch. The *long*, spindle-shaped varieties grow best and longest when the seed is sown 1½ inches deep, but these are being displaced by the very early olive-shaped or Turnip Radish. The latter should be sown only ½ inch deep, and requires the earth to be well beaten down.

Though sometimes cooked, they are commonly eaten raw as salad.

New English radishes come into the

markets in May, but considerable quantities of the most delicate growths from France a month or so earlier.

The best English growths are the Forcing Carmine, Crimson Forcing, Wood's Frame, and French Breakfast; but the white or rose-coloured kinds do not take at present with buyers. Bright coloured, white flesh, and tender are the points wanted.

They are usually sold wholesale by the dozen bunches, the prices fluctuating between 3d. and 1/- per dozen.

Radish-pod Pickles. — (See also *Pickles*, *Samphire*, etc.) — These pods make excellent pickles, if gathered when the seeds are fully grown, but still soft —that is, while they are tender. They are best if soaked in strong brine a few days, then rinsed in cold water, picked over, and bottled, and finally filled up with vinegar. A good teaspoonful of pickling spice should be added to each pint. Cork well so as to keep them air-tight, and store upside down, so as to keep the cork wet.

Ragout (pr. *rag-goo'*).—This is a French word for *Stew*, or *Relish*. A ragout generally consists of meat and vegetables cut small, stewed brown, and highly seasoned. Various tasty ingredients are used in the best ragouts, such as mushrooms, truffles, sweetbreads, quenelles, game, and fish, thus making a rich, savoury sauce, to whet the appetite by imparting flavour to other dishes, and not for eating alone.

Ragout Financière aux Truffes is made up of cocks' combs, truffles, etc.

Rahat Lakhoum. — See *Turkish Delight*.

Rain, or **Guango Beans.**— These are the produce of the South American plant *Pithecolobium saman*, lately introduced into this country as a substitute for the carob or locust bean in cattle feeding. The legumes contain a sweet pulp, but of themselves are astringent to the taste, and cause when chewed a peculiar irritation of the fauces.

Raised Pies. — Solid meat pies, baked without a dish. (See *Meat Pies* or *Pork Pies*.)

Raisins. — Da. *Rosiner;* Du. *Rozijnen;* F. *Raisins secs;* G. *Rosinen, Weinbeeren;* It. *Uve passe;* Hind. *Darakh;* Port. *Passas de uva;* Rus. *Issum;* Sp. *Pasas;* Sw. *Russin;* W. *Rhesin*.

Raisins are simply dried grapes, and, although there are hundreds of varieties of table and wine grapes, there are only a few suitable for raisins. Of all dried fruits raisins have from the earliest times been the most popular, and have even served as a medium of exchange. They are usually named after the country or district from which they are obtained, and sometimes from the species of grape.

Hence we have:—Muscatels, Blooms, Sultanas, *Caraburnas*, Malagas, Lexias, Valentias, Black Smyrnas, Alicantes, Denias, Elemes, etc., most of which are separately described under their respective headings in this work.

The best known kinds are the Spanish *Denias* (*Pasas de Denia*), of which there are two varieties, and the *Pasas de Malaga*, of which there are three—*La Moscatel*, *La Flor*, and *El Sol*.

There is another variety called *Pasas de Legia*. (See *Lexias*.)

Not all grapes, however, are suitable for making into raisins, but only the fleshy varieties which develop abundant saccharine matter.

The bulk of the ordinary large raisins coming to this country are produced on a narrow tract of Spain, on the Mediterranean border, and especially in the Malaga district, whence have come the finest muscatels. Others are grown in Greece, Italy, Southern France, Turkey, and Persia, also in Australia, California, and the Cape of Good Hope, but the three latter growths do not reach England.

The Greek crop is now limited almost entirely to Messina and Laconia, and is mainly bought up by Patras merchants for export to England and America. Of some 30,000 tons produced in California over three-quarters are grown in Fresno County.

Raisin grapes are most extensively cultivated around Denia, in Spain, and the variety grown there is coming in competition with the Malaga product. In

RAISINS—(continued).

Malaga, where there is no fear of rain, they are usually cut in bunches when quite ripe. The bunches are then carefully dried in the sun, and that requires two or three weeks. But in Denia this cannot be done on account of the climatic changes, and the grapes are therefore dipped into hot lye, made by dissolving the alkali out of wood ashes and quicklime with water, and then adding a pint of olive oil and a handful of salt to each four gallons. This causes the saccharine secretions to exude to the surface, and give the peculiar brown varnished appearance to the fruit. The oil also helps the wrinkling and brightens the appearance.

This rapid process of curing permits Denia raisins to be exported at a lower price and earlier than those from Malaga, but they do not after all present such an attractive appearance as the latter.

They are packed in boxes of 22lbs. nett. The finest are classified as Royal Clusters, then come Choicest Clusters, Choice Clusters, Black Baskets, Dehesa Layers, Imperial Cabinet, London Layers, Faced, and Loose.

In Old Castile and other parts of Spain, the peasants have the curious superstition that grapes, to be successfully cured for winter, must be cut off the vines, carried to the lofts and hung up to dry, without being looked at. The women, therefore, on approaching the vines, close their eyes or bandage them over while groping for the bunches, cutting them off and placing them in the basket; and when this is full, they cover the top with vine leaves. They then open their eyes, but on arriving at the drying loft, the eyes are again religiously closed or bandaged while hanging up the bunches.

In packing raisins, especially muscatels, the Spanish method of showing the stems is now generally adopted, so that in opening a box care should be taken to remove the right lid, and commence at the top.

Imports, 33,581 tons in 1897, 29,707 in 1898, and 33,826 in 1899. About half from Spain and the other half from Turkey.

Raisins are used in pastry-making and cookery of pies, puddings, bun-loaf, etc., and as a dessert fruit. They are judged by size, colour, and fleshiness, and are also used extensively in making and flavouring ordinary wines, as well as "raisin wine."

Distillers use large quantities of them. The white muscatel is always in great demand in Switzerland and Austria, for the making of vermouth.

Raisins contain more sugar and less acid than fresh grapes, and are more laxative. Eaten to excess, they are very apt to derange the stomach. In 1894 Spain exported 32,425,000 kilogrammes (1 kilo equals 2·2lbs.), principally to Great Britain and the United States.

Great Britain pays about a million a year for raisins. But the finer qualities are not used so much now as they were twenty-five years ago, when they formed part of the dessert at almost every hotel table and public dinner. Besides, the perfection attained in these last ten years in canning fresh fruits has greatly lessened the demand for dried fruits.

The small, seedless varieties are very popular with cakemakers, but being gathered young and unripe, possess little flavour, and will not keep so long as the full grown kinds in their ripened state.

Seeded or Stoned Raisins.—Grocers may buy these ready seeded and packed in 1lb. cartons from the fruit merchants, or they may buy a small machine and seed the raisins as required. The main difficulty is in preventing the raisins from sugaring or "candying" after the skins have been broken, although various preparations have been put on the market to prevent this. Stoned Valencias soon deteriorate, but Muscatels retain their fine qualities and appearance much better. There is also some prejudice against the use of seeded raisins, most housewives preferring to stone their own. However, it is certain that those freshly stoned go to the consumer in much smarter condition than those dried up through being long in stock. Many grocers prudently avoid the loss in the

weight, and also the risk of stock spoiling by announcing "best raisins stoned free of charge, if required," so that they may first weigh and sell the raisins, and finally stone them for the customer. The best Raisin-seeder we have seen is supplied by Parnall's, of Narrow Wine Street, Bristol. It is very simple in construction and easy to work, but it will seed 75lb. an hour, and does not get out of order.

To Stone or Seed Raisins by Hand.—Pour boiling water over them and let them stand five or ten minutes. Drain, and rub each raisin between the thumb and finger till the seeds come out clean. Dry the raisins before using, and rub them in flour before putting into cake, to prevent their sinking to the bottom. If chopped, flour should be scattered over them, to prevent their adhering together.

For cleaning and freshening up the appearance of raisins, currants, etc., we know of no machine equal to Mr. Duckworth's, of Colne.

Housekeepers are somewhat unduly prejudiced against "old" raisins, but age is not necessarily a detriment, for such fruit often cooks better than the new, because the skins are mellowed by age, and they are always the cheapest. The usual method of handling raisins and similar fruits is often a source of disappointment or loss to retailers who overlook the shrinkage, lunching, and the samplings they undergo, not to mention the giving of down weight or draft each time a pound or half pound is sold.

When too old for family use, through becoming candied, shrivelled and dried up, raisins generally pass into the hands of confectioners or the keepers of dining rooms in poor neighbourhoods. If not good enough for that purpose they may be sold for poultry or pheasants' food.

Importers and Merchants: Kimpton Brothers, 36 and 37, Mincing Lane, London, E.C.; Morris and Jones, 13 to 19 Sir Thomas Street, Liverpool.

Raisin Wine.—(See also *British Wines.*)—This is usually made from dried grapes. No fruit is more suitable for making light, dry wines than good raisins, especially muscatels. *Malaga* and *Hungarian Tokay* are wines produced from the partly-dried raisins; also *British Sherry*, *British Cape*, and *British Champagne*, the latter often being of a quality equal to the foreign product. The addition of a solution of sugar to the raisins produces, in fermentation, considerably more alcohol than existed in the grapes themselves.

How to make Raisin Wine.—In a clean, sweet tub, put 24lbs. of raisins, picked from the stalks, and over them pour 6 gallons of boiling water; then add 6 lbs. of sugar, and let these steep together for about 14 nights, stirring them well up every day. After this pour off the liquor, squeeze out all the juice from the raisins, and add ¾lb. of finely-powdered supertartrate of potash. Put the liquor into a cask, which must be quite filled up, and reserve some of the liquor to keep it filled while fermentation proceeds. When fermentation has ceased, and the hissing sound is no longer to be heard, run off the wine into a fresh clean cask, and bung it tightly for a year. Most makers add two or three lemons.

Rama Wine.—A popular Bosnian product. Although of inferior quality as a wine, and manufactured in a somewhat primitive manner, it is light and pleasant, and more generally appreciated than any other in Bosnia.

Ramadoux Cheese.—A Bavarian make consisting of water 55 per cent., fatty matter 14, casein 25, and salts 6.

Rambutans.—The very pleasant and refreshing fruits of *Nephelium lappaceum*, imported from the East but rarely seen in this country.

Ramequin, or Souffle Cases.—(Made of paper, in various shapes and sizes.) *Ramequin* is a French name (pronounced *ramkin*) for cheese fritters, German *Kasekrapfen* (Welsh rarebit), or small slices of bread covered with a *farcé* of cheese and eggs. A *soufflé* is a puff-ball, or light fruit pudding, raised in the oven.

Rampion.—This is the root of the plant *Campanula Rapunculus*. In

France it is very popular, boiled as a vegetable.

Ramtil Seeds.—(See also *Niger.*)—A name for black til, the *Guizotia oleifera* of De Candolle, and the *Verbesina sativa* of Roxburgh; grown in Bombay and Madras, which yields a large quantity of bland oil like olive oil.

Randanite.—See *Kieselguhr*, p. 508.

Rangoon Rice.—(See also *Rice*)—So called after Rangoon, the chief port and town of British Burmah, whence immense quantities of rice are shipped.

Rapeseed, or **Coleseed.** — Da. *Roefrö;* Du. *Raapzaad;* F. *Colza, Navette;* Ger. *Rubsaamen;* It. *Ravizzone;* Pol. *Rzepnica;* Port. *Semente de Nabos;* Rus. *Rapnoe Semja;* Sp. *Nabina;* Sw. *Roffrö.*

Rape is a biennial plant, of the cabbage or turnip kind (*Brassica napus*), with long root and narrow leaves. It is cultivated in this country chiefly as a green food for sheep about February. The seed is sown in May or June, and, not being thinned out like turnips, the seed is sown more sparingly.

About 55 per cent. of the rapeseed imported now comes from India, 31 per cent. from Russia, and the rest from Roumania, Belgium, Germany, and France. A quarter of English seed weighs 424lbs., East Indian 416lbs., and Baltic 424lbs.

In England it is cultivated most in the counties of Lincoln and Cambridge, and will yield 40 to 50 bushels an acre; but it is rarely allowed to ripen for threshing, and the seed is consequently nearly always imported. Rapeseed is, however, chiefly valuable for the oil it contains. It is also, when mixed with canary-seed, largely used for bird food.

Rapeseed Oil, or **Colza.** — G. *Rubol.*

A yellowish, or greenish-brown oil, of a very strong smell and taste when unrefined. (See also *Ravison Oil.*)

The seed is first steamed, so as to coagulate the albumen, and then pressed. A quarter of seed will yield, by double pressure, 150 to 160lbs. of oil, and the refuse, known as rapeseed-cake is fed to cattle, or sometimes reduced to powder for use as a manure. The cake is, however, apt to give to the flesh a rancid, oily flavour.

Rape oil is used for soap-making, dressing wool, burning in lamps, and as a lubricator, especially for locomotives and marine engines, also for adulterating olive oil, in which it is very difficult if not impossible to detect it.

After being highly refined with sulphuric acid or alkali, or by a current of steam, the best becomes a pale yellow, or gold colour, and of sweet taste, without any disagreeable smell. Prices vary from £20 per ton, in pipes, to £23 for genuine E.I. thickened.

Apply to C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Rappadura Sugar.—A very coarse kind of unclarified sugar candy made in Mexico and other parts of South America. It is cast in cylindrical moulds, and the pieces, about 1lb. each, are then carefully covered with flag leaves.

Rappee.—A kind of strong snuff, coarser than *Maccouba*, and made from the moistened veins, fibres, and stalks of the darker and ranker of tobacco leaves. It is dark brown, or nearly black in colour, and generally scented. In early times the "sauced" and fermented tobacco leaves were tied up into "carottes," or spindlelike bundles, and the snuffer would take a snuff-rasp and rasp off as much as he required; hence the word *rapé*, or *rappee.*

Raspail.—A proprietary French liqueur. So named after its inventor. It is a kind of medicinal cordial forming a rather agreeable tonic, and largely imitated.

Raspberries. — Da. *Hindbær;* Du *Flamboos;* F. *Framboises;* G. *Himbeeren;* It. *Mora di rovo, Lamponi;* Port. *Frambesia;* Sp. *Frambuesa;* Sw. *Hallon;* W. *Mafon.*

This delicious sub-acid fruit is of the genus *Rubus Idæus*, and is closely related to the bramble, or blackberry. The shrubs are usually trained in rows

2½ feet apart, and the plants 18 inches asunder. It is a deciduous shrub with a creeping perennial root-stock, and a biennial stem—that is, it produces shoots one year which bear fruit the year after and then die. The Raspberry is not a true *berry*, but more properly a collection of minute stone fruits.

The plants are very prickly, and grow wild in Great Britain and most European countries, or are easily cultivated by means of suckers, in light, rich soil, in any part of Europe, especially in moist and shady situations.

To ensure strong canes and large fruit, the soil should not be less than 18 inches deep.

The cultivated fruit is much larger, but, perhaps, scarcely equal in flavour to the wild. The latter, when ripe, is always red, but some of the cultivated varieties are white and yellow. The best sorts are the "Superlative," "Carter's Prolific," and, for extra large fruit, the "Northumberland Fill-basket."

In the State of New York and other northern states in America, black raspberries, or "Black Caps" as they are called, are very popular and cultivated in numerous varieties. A variety in California is known as the "Strawberry Raspberry," and is of exceptional size.

English raspberries come in about end of May, but are most plentiful from middle of July to end of August. They lose their freshness, and become mouldy sooner than any other fruit, but are prized second to none. They are often marketed in casks, and sold by weight, but these are frequently adulterated with added water.

Raspberries are a profitable crop, and always saleable, but the gathering is expensive, and the fruit rapidly spoils if not picked soon as ripe. It is valued for dessert and in great demand for cooking and preserving, being used in various ways, fresh or preserved in ices, jellies, and confections, also imparting its pleasing flavour and peculiar perfume to spirits, cordials, liqueurs, and vinegar. A capital wine is made from the fruit and a strong spirit may be distilled from it.

Large importations of raspberries now come from Canada, which is probably the best source for manufacturers requiring quantity.

Raspberry Jam.—(See also *Jams.*)—Factory-made qualities usually consist of following grades:—

1. 12 oz. sugar to each pound of fruit.

2. 18lbs. crushed sugar, 14lbs. raspberries, and 6lbs. best apple pulp.

3. 30lbs. sugar, 14lbs. apple pulp, 12lbs. green gooseberry pulp, 10lbs. raspberries, and 7lbs. glucose, with cochineal colouring.

The fruit or pulps are first brought to the boil, then the sugar and glucose, etc., are stirred in, and the whole finally boiled till enough. Sugar develops and improves the flavour and appearance of raspberry jam, but has a contrary effect on strawberries. There are not many jams made from raspberries and sugar only.

Raspberry Syrup. — Used for flavouring beverages and confections.

1. Reduce fresh, ripe raspberries to a pulp, and let this stand at a temperature of about 20° C. (or 68° F.) until a small portion of the filtered juice mixes clear with half its volume of alcohol. Then separate the juice by pressing, set it aside in a cool place, until the liquid portion has become clear, and filter. To every forty parts by weight of the filtrate (which should not be allowed to remain unprotected with sugar more than two hours), add sixty parts of sugar, heat the mixture to boiling, avoiding the use of tin vessels, and strain. Keep the product in well-stoppered bottles, in a dark place, and at a temperature of about 55° F.

Other fruit syrups are made in same way. The use of alcohol is to hasten the process, to aid in the temporary preservation of the juice, and to avoid acetic fermentation and fungoid growths.

2. Put 6lbs. of raspberries into a china bowl, with a quart of water, in which has been dissolved 2½ oz. citric acid, and let it remain twenty-four hours; then strain, taking care not to bruise the fruit.

To each pint of clear liquid add 1½lbs. of sugar, and stir until it is dissolved.

3. Contuse the berries, place them in a vat, add 2 per cent. of sugar, and 5 to 6 per cent. of alcohol, and ferment the mass at a temperature of between 70° and 80° F. for three or four days, until all pectin has separated, and no more signs of fermentation are visible. Then express the juice, which allow to settle in a cool place for two days, decant carefully from the pulverulent pectin, and filter.

Convert into syrup by dissolving in five parts of the clarified juice, nine parts of sugar, and heating to the boiling point.

Raspberry Vinegar.—This flavouring liqueur is usually made from the fruit or syrup, with acetic acid, sugar, and water, or it may more quickly be prepared by adding a little essence of raspberry to ordinary vinegar.

Recipes :—

1. Take 1lb. of raspberries, rub down with 5lbs. sugar, and add to 1 gallon of vinegar, or a mixture of 1 pint of acetic acid in 7 pints of water.

2. Put a pound of very fine ripe raspberries in a bowl, *bruise them well*, and pour upon them a quart of best vinegar. Next day strain the liquor on a pound of fresh ripe raspberries; bruise *them* also, and the following day do the same, *but do not squeeze the fruit, or it will make it ferment;* only drain the liquor as dry as you can from it. Finally pass it through a canvas bag, previously wet with the vinegar, to prevent waste. Put the juice into a stone jar with a pound of sugar, broken into lumps, to every pint of juice; stir, and when quite dissolved strain again and bottle.

It is a particularly grateful, cooling, and refreshing beverage in fevers and in hot weather. It may be termed a very valuable medicine.

Probably there is no better remedy for the complaint known as "clerical throat."

Raspberry Wine.—A strong and very agreeable liquor, made by fermenting raspberries, either alone or along with currants, cherries, etc. The commercial article usually contains 10 to 20 per cent. of proof spirit, a little raspberry juice, a little cochineal colouring, and 2½ to 5 grains of salicylic acid to the bottle.

Raspings (for Cooking). — See *Holder's "Victorian" Raspings* (p. 463).

Rassol.—See *Salt.*

Ratafia Biscuits.—Sweet fancy wine-biscuits.—Take 1½lbs. sweet almonds, ½lb. bitter almonds, 3½lbs. lawn sugar, 2 ozs. rice flour, 2 ozs. baked flour, and 1¾lbs. white of eggs. This process is much the same as for macaroons, only a smaller tube must be used, and the ratafias splashed with water by means of a water-brush, care being taken that the splashes are very light. If *wet*, they will be spoiled. Bake in a trifle warmer oven than the macaroons.

Ratafia Essence (*rat-a-fee'-a*).—For flavouring or culinary uses. Usually prepared by mixing 1 part of the essential oil of ratafia with 6 to 12 parts of rectified spirit.

Ratafia Liqueurs.—Some authorities say the word "ratafia" was derived from "rectifié," meaning rectified spirit; others say that it was originally the name of a liquor drunk at the ratification of an agreement or treaty. It appears, however, to be a Spanish word, and has become a generic term for certain thick alcoholic syrups or sweet cordials, flavoured with the juices of fruits, particularly of almonds, cherries, apricots, peaches, and with spices. (See *Liqueurs.*)

There are several factories in the Departement of Isere (France) where cherries are largely used, but the most popular is that made at Grenoble.

These ratafias are often very strong—and sometimes even poisonously so—unless freely diluted, or used very sparingly.

Ratel-i-coum. — See *Turkish Delight.*

Ratoons.—A Colonial name for the fresh shoots from the stool of the sugar cane, which is called first or second ratoons, according as it is the first or

second year's sprout, after the crop from the first planting of the cane has been reaped. The word seems to be a corruption of the French "*rejeton*," a shoot or sprout.

Rattans.— The canes or stems of various species of *Calamus* palms, largely exported from Sumatra, Borneo, Celebes, etc., for making into walking-sticks, rough brooms, cane for chair seats, etc.

Ravensara Nuts.— The produce of *Agathophyllum aromaticum*, found in Madagascar, where they are used as a spice, and occasionally exported to France.

Ravigote Sauce.—A piquant French sauce, made chiefly from shalots and other aromatic herbs. It is often used in preparing French mustards.

Ravison Oil.—An inferior description of rape oil, expressed from wild rapeseed, *Brassica napus*, var. *oleifera*, grown in Russia, and sometimes used as a substitute, because it is cheaper than the English and other sorts.

Razor Pastes.—Used for sharpening razors, surgical instruments, etc.; also for reviving razor strops. These pastes are ordinarily made by melting and mixing together equal weights of spermaceti, white wax, and almond oil, with a little Windsor soap, and perfumed with a little rose-water. Some kinds are made of emery powder or the like, for spreading on the surface of a razor strop to give it its sharpening property.

Reading Cakes.—These light sponge cakes are generally made of following proportions:—12lbs. flour, 6lbs. ground white sugar, 4lbs. currants, 1lb. rice flour, 20 eggs, baking powder, and 1 oz. salt.

Reading Sauce (Charles Cocks' Original). — The best sauce made. This celebrated sauce was first introduced to the public in the year 1789, and at once found favour with connoisseurs. Since that time it has continued to increase in popularity, and is now well known throughout the world. It is very highly esteemed for all culinary purposes, and as a fish sauce it is *par excellence*.

(*The firm of Charles Cocks and Co. are also manufacturers of many other high-class specialities, reference to which will be found under various headings in this Manual.*)

Ready-made Medicines. — See *Drugs*, p. 332; also *Patent Medicines*.

Red Bird Peppers. — See *Bird Peppers*.

Red Cabbage. — F. *Chou Rouge*; G. *Rothkohl*. (See also *Cabbages* and *Sour Crout*.)

There are several varieties of these, differing in colour, size, and shape; some are light red, and others deep red, purple, and blue; some with hard, compact heads, and others of rosette shape.

Large quantities come from Holland every winter in bags of about 1 cwt. each. Cheapest in October or November, say about 2/6 a bag.

Red cabbages may be preserved in a fresh state for a long time by gathering them before the frosts, and letting the coarse outside leaves remain on them. Cut them so that there remains about 2 inches below the leaves, then scoop out the pith as far down as a small knife will reach, and suspend them, head downwards, by means of a cord, in some cool place, occasionally filling up the bottom part with clean cold water.

Another good method is to cut the cabbage from the stump, and pack close in a cask, taking care to fill up all the vacancies with dry chaff, and keep in a dry cellar.

How to Pickle Red Cabbage.—Cabbage should not be pickled until it has been slightly frost-bitten. The hardest and firmest are the best. Remove the outer leaves, and cut the cabbage into quarters, then cut each quarter crosswise into long thin slices—the finer it is cut the finer will be the pickle. The sliced cabbage should then be sprinkled with crushed salt, and well mixed up, or rubbed into the cabbage. It should then be left in a cullender, or spread on a slanting board or slab, so that the purple juice and brine may drain away. After 36 or 48 hours, during which time

it may be turned over once or twice, the cabbage should be picked over and any lumps of salt removed, and immediately jarred. Only fill the jars about three parts full. Have ready a sufficient quantity of cold vinegar, that has been boiled with a little pickling spice or black peppercorns, and fill up the jars at once so as to cover all the cabbage, and stir up the pickle with a piece of clean stick or wood. It will be ready for use in an hour.

Pickles or vinegar should never be allowed to come in contact with iron, steel, or tin, or even glazed earthenware—wood or glass is best. Some people add beetroot, cut in slices, which makes the colour brighter. (See also *Pickles*, *Dutch Vegetables*, etc.) Red cabbage has a great tendency to go off colour, and turn soft from exposure to air and light. Retailers should, therefore, be very careful to see that what they buy is fresh and crisp, and only in quantities which are sure to be resold in a month or two.

Special Firm.—Allen Jeeves & Sons, Seddington, Sandy, Beds.

Red Char. — A species of small salmon tinned at Telemarken, Eastern Norway.

Red Chillies. — See *Capsicums*, *Chillies*, *Pimientos*, etc.

Red Crocus Powder.—A polishing powder prepared from crystals of sulphate of iron, calcined in crucibles. It is really the calcined powder taken from the bottom of the crucible, where the heat is most intense. The powder in the upper part is called "Jewellers' Rouge," but the crocus powder is of a purple red colour, is harder, and is used for ordinary work, whereas the rouge is of a scarlet colour, and only used for gold and silver work.

Red Currants. — F. *Groseilles rouge*; G. *Rote Johannisbeeren*; Port. *Corinthas vermelhas*; Sp. *Corintos encarnardas*.

The berries of *Ribes rubra*, of which there are about a dozen good varieties, and cultivated for dessert use, making into jam, jelly, and for cooking. A British wine is also made from, or called after, this fruit. Red currants are essentially a culinary fruit, and mostly used in tarts, pies, and puddings, with a few raspberries for flavouring; but they are not very popular, never in great demand, unless it be for jelly making, and comparatively few are grown.

The "*Gelées de Groseilles*" of Bar-le-Duc are, however, noted all over France, and there is perhaps an increasing inquiry for the young green, or unripe fruit.

Like gooseberries, in ripening, their acidity greatly increases, and seems sharpest when changing colour. The juice is gently acid and cooling, and generally very grateful to persons suffering from fever.

There are really only two varieties of the currant berry, the red and the black. *White* currants being merely red ones changed in colour by means of cultivation, while *yellow* ones come from the black variety.

Red Currant Jam. — (See also *Jams.*)—Boil as directed for black currant jam, using 12 ozs. of sugar to every pound of fruit.

The fruit must be quite fresh, or the flavour will be lost. The demand for red currant jam is only small, and it is very liable to ferment, unless a large proportion of sugar be used, and this would destroy the flavour and agreeable acidity of the fruit.

Red Currant Jelly.—A common way of manufacture is to pick clean 12 quarts currants, then put 3 quarts into a pan and heat slowly, breaking up the berries with a wooden masher. Then turn the fruit into a piece of cheese-cloth and press out the juice; finally wash the pan, and put the juice and sugar into it, stirring gently until the sugar melts. Currant jelly does not keep well, but shrinks up or moulds very rapidly, and care should be taken to stock it very sparingly. In making this jelly a few white currants are often mixed with the red, as the latter alone produce a rather dark jelly. Glucose also is a common addition instead of cane sugar. Apple jelly, starch, acetic

acid, and aniline dyes are frequently used in imitating or adulterating it.

In the United States currant jelly is often imitated by boiling the cores and parings of apples which have been evaporated; glucose, sugar, a vegetable acid, and some colouring and flavouring matter complete the delicacy!

Red Herrings.—F. *Harengs saurs.* (See also *Bloaters*, *Herrings*, etc.)

Herrings which have been heavily salted and cured by hanging up to dry in the smoke of green wood, which gives them a *red* appearance.

Acetic acid is also often employed in curing red herrings.

The business of preparing these is chiefly carried on by the poor, and not merely in factories. The herrings are first soaked about twenty-four hours, or a little longer, in strong brine, and then hung up as already stated. After being thus cured, they are commonly packed in barrels of 500 to 700 each.

Large quantities are prepared on the Northern coast of France, around Dunkirk, also in Holland, but there is much "faking" practised to give a beautiful red colour.

Red Lead. — F. *Minium;* G. *Mennige;* It. and Sp. *Minio.*

The ancient name of the valuable pigment was *minium.* It is a heavy powder of orange red colour, its specific gravity being 8·53. It is one of the oxides of lead, or rather a compound of two oxides—litharge and puce oxide.

The best sort is made from pure lead, and is mostly used by painters. Another quality for glass-makers is made from impure lead.

The occasional adulterants are red oxide and other cheap reds, but red lead is very rarely adulterated. *Red Lead Paint* is the best paint that can be used for preserving ironwork, the reason being that it has the effect of producing on the iron, under the paint, a skin of unoxidisable and protective black or magnetic oxide.

Red Pepper.—See *Cayenne.*

Red Rice.—A variety of *Oryza sativa*, dyed with cochineal, and is an article of considerable trade in the East.

Red Tea. — This is prepared from the same kind of tea shrub as ordinary teas, and is merely of a brownish-black, rather than red, colour. The infusion, however, is certainly of a deep red colour, and this fact is probably the origin of the Chinese term "*Hung-cha*," or red tea. *Hung-moey* (red plum) is another variety of similar kind.

Refined Beef Suet.—See *Hugon's "Atora" Refined Beef Suet.*

Refined Sugars.—These are white crystal sugars, which have been entirely freed from all impurities and moisture by drying, either in concreted lumps or loaves of conical form, or in small moulds of cubical shape, and drained in centrifugal machines.

Reginette, or Ribbon Macaroni.—A brownish paste (see *Italian Pastes*) in long, wavy, ribbon-like pieces, about ¼ inch wide, and thin as a sixpence. Retailed at 5d. or 6d. per lb.

Reindeer Moss.—This moss (*Cladonia rangiferina*) is one of the edible kinds, but contains only about 1 per cent. of starch.

Reindeer Tongues.—F. *Langues de rennes.*

Mostly from Scandinavia, and especially Lapland, where the reindeer, *Cervus tarandus*, is an important article of food, and considered equal to the finest venison. These tongues are cured and dried in the same way as ox tongues.

In England reindeer tongues are generally served as a separate dish, for breakfast or lunch. It has been said the tongues of horses and other animals are often cured and passed off in this way. Most people, however, while saying with Goldsmith that they love everything that's old: old friends, old times, old manners, old books, old wines, and even old whiskies, will really except old horse, mule, and donkey tongues.

Remoulade Sauce.—A French sauce or salad dressing. Generally composed of boiled egg yolk, flour, mustard, olive oil, pepper, and vinegar, and used chiefly in Lent and other fast days.

Take the yolks of four hard-boiled eggs and place them in a mortar, taking care that no particle of the white adheres to them, as this would spoil the sauce. Next, take some tarragon, chervil, chives, and parsley in equal quantities, and blanch them in the ordinary way. Drain carefully, chop finely, and then add to the hard-boiled yolks; pound vigorously for two or three minutes until the herbs have become thoroughly mixed with the eggs; next add, drop by drop, a gill of salad oil, and a little better than a tablespoonful of either shallot or tarragon vinegar; season with salt and coralline pepper to suit your own taste, pass through a hair sieve or tammy, and serve immediately. Note.—This sauce should be "worked" in a cool place, and, if necessity arises, and it is not possible to ensure its being used at once, it must be placed upon ice until required.

Rennet, or Runnet.—F. *Présure.* A preparation from the stomach or maw of calves, pigs, lambs, and other such animals. It is obtained by macerating and cleansing in water a piece of the fourth or last digesting stomach of the animal. This is then freed from the outer skin, fat, and useless membranes. It is next washed, and preserved in either brine or dry salt, and finally dried till it somewhat resembles parchment in appearance.

Rennet has long been used in various forms in the manufacture of cheese, where its gastric juice serves to curdle the milk—that is, separates the curd or casein of milk from the whey or serum.

Every rennet contains, according to Benecke, the hay bacillus (*Bacillus subtilis*), which is also present in ripening cheese.

The milk curdling properties of rennet are due to a ferment termed *chymosin*. This ferment is present in many animals. It may be extracted from the calf's stomach with water, but a better way is to digest with weak acid for 24 hours and then carefully neutralise.

Aqueous solutions of salicylic acid also extract the ferment well and will keep.

Alcohol precipitates the ferment in an impure form, but prolonged contact with alcohol, especially if strong, is said to destroy the ferment.

That made from the calf stomach is preferred, and the most used. Next to this is rennet from the stomach of pigs (which is also used in making pepsin). It is said to be stronger than calf's rennet. That of the lamb is the weakest, and is seldom used. But in buying the foreign rennet vells we know very little of what has been used, and they are often a mixture of calves' and pigs' stomachs, blown up and dried.

Calves' Maws, or Rennets, properly cured, may be had at almost any slaughter-house or meat market for about 1/- per dozen. When they are too dry it is difficult to get any virtue out of them, although salted rennets are preferable to fresh ones, and some rennet makers like to keep them a year before macerating them. They should be steeped in brine for two or three weeks before they are cut up.

Rennet Essences and Extracts.—*Sweet* essence of rennet is made from the freshly-killed calf, while the ordinary essence is generally prepared from the *salted* rennets obtained in casks from the slaughter-houses, and often contains an objectionable quantity of salt and mineral acids.

It can be prepared as follows:—6 ozs. fresh rennet, 2 ozs. salt, 2 ozs. proof spirit, and 1 pint white wine; digest 24 hours, and then strain. It should be quite colourless. It is used for same purposes as rennet itself, in curdling milk and preparing cheese. Very little suffices.

The *German Pharmacopœia* gives the following simple formula for liquid rennet:—3 parts by weight of the mucous membrane of fresh calf's rennet, macerated for 3 days in 26 parts of white wine, 1 part of table salt being added; 2 or 3 teaspoonfuls of this will curdle a quart of milk.

Or, take 1 calf's rennet, 1 drachm lactic acid, 1oz. glycerine, 2 ozs. strong sherry wine (say, 17 per cent. alcohol), and water to make up 36 fluid ozs.

Macerate the minced rennet with about 3 ozs. of salt for 10 days, filter, and colour with cochineal.

Rennet Tablets is the latest form assumed by these preparations. These are made about the same size as three-penny mint lozenges, almost white in colour. They are sold in sixpenny phials of 20 tablets, each tablet when dissolved in a teaspoonful of water being sufficient, with the aid of a little sugar, to curdle a quart of warm milk at a temperature of 98° Fahr.

The varying results obtained from the use of rennet preparations in their liquid or powdered states have raised the question whether a guarantee ought not to be asked for with all purchases.

Renetine. — A German preparation of rennet, patented by Dr. Moritz Blumenthall, and put up in ½lb. and 1lb. tins, for retail at about 4/6 and 9/- each.

In Northern India, where the Hindoos object to the use of rennet on account of its animal origin, the fruit of *Withania Coagulans*, a shrub growing in Sind, N.W. Provinces, Afghanistan, etc., is always used to coagulate milk in cheese-making.

Resin, or **Colophony.** — Da. *Harpix;* Du. *Hars;* F. *Resines;* G. *Harzen;* Ind. *Ral;* It., Lat., Port., and Sp. *Resina;* Sw. *Harts;* W. *Ystawr.*

The residue left after the distillation of oil of turpentine from the oleo-resin or crude turpentine that exudes from various species of coniferous pine trees. After distillation of the oil the melted resin is removed from the stills and run through wire strainers into barrels.

The lightest-coloured resin is from trees which have been tapped for the first time, and it then constitutes about 80 per cent. of the crude turpentine. In subsequent years the proportion of resin in the crude turpentine gradually increases, and the resin from a given tree also becomes darker every year.

Most of these substances exude in a liquid state from plants and trees, either from natural fissures or artificial wounds. They are composed of carbon, hydrogen, and oxygen, and they turn hard and brittle when cold, and viscid when hot.

They will not dissolve in cold water, like gums, but will generally do so in alcohol, and melt readily with heat. They are highly inflammable, and burn with a bright smoky flame.

True resins may be grouped as :—

(1) The *Copal group*, consisting of amber, animi, or Zanzibar copal, Angola, Sierra Leone, pebble, and other East and West African copals are all insoluble in ordinary solvents until fused.

(2) The *Dammar group*, comprising Singapore and Batavia dammars, Kauri or Australian dammar, and American copal or eourbaril resin, are more or less soluble in ether, chloroform, benzol, acetone, oil of turpentine, etc., and are almost entirely insoluble in alcohol.

(3) The *Sandarac group*, such as sandarac, mastic, Manila copal, the black, white, and sal dammars of India, and guaiacum resin, are more or less soluble in alcohol without warming.

(4) The *Colophony group*, common resin or colophony, are obtained in the distillation of crude turpentine or other oleo-resins, or they may be natural products which have lost their volatile oil through evaporation. They are entirely soluble in alcohol.

(5) The *Benzoin group*, such as benzoin, dragon's blood from the East Indies, yellow and red grass-tree gums or acaroid resin, are soluble in alcohol, and contain benzoic or cinnamic acids, or yield them when subjected to heat.

(6) The *Lac group* (stick lac, seed lac, shellac, button, and garnet lac) includes the resinous incrustation, as well as the purified products obtained therefrom, which is found on the twigs of many species of trees, and is elaborated from the sap by the female of the lac insect. (*Coccus lacca.*)

They are partially soluble in alcohol, forming a turbid solution.

The chief hard resins are *Anime, Lac, Mastic, Gum benzoin, Colophony* (common resin), *Dammara, Dragon's blood, Guaiacum, Sandarack, Storax, Tacamahac*, and are all easily powdered.

The soft or semi-fluid resins are known

as balsams, and owe their softness to the essential oils which they contain. Turpentine and copaiba are familiar examples. These variations in colour of the different grades of resin appear to depend partly upon the character of the crude material from which they have been prepared. As already noticed, the turpentine obtained during the first year of tapping the trees is known as "virgin dip," and yields the pale water white, (W.W.) or window glass (W.G.) resin, that of the second year, a resin of more or less amber tint (N.W.R.), of the third year a more or less dark brown resin, not quite transparent, and of the fourth or last year an opaque heavy resin of a deep brown or almost black colour.

They combine readily with oils when heated, and hence are easily made into varnishes.

Amber and copal are fossil resins.

The common resin of commerce (often spelt *rosin*) in its crude state oozes, in a semi-fluid state, from several species of pine trees. It is subjected first to liquefaction and filtration, and the turpentine being separated by distillation, while the resin remains behind.

Yellow resin usually contains more or less of water, while the black does not.

French Resins all come from the sea coast (Landes Department), where the sea pine, *Pinus maritima*, is specially cultivated for the purpose, and covers about a million acres.

Mixing well with alkali, resin is now used largely in making common soap, varnishes, sizing for paper, also for fixing the metallic capsules on bottles, preparing plasters, etc.

The prices for common qualities vary from 3/6 to 8/6 per cwt.

Apply to C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Resin Oil.—As above shown, this is obtained by the dry distillation of resin. It is chiefly used as a lubricator. Considerable quantities are produced in America, also about Dax, south of Bordeaux, in France.

Resin Soaps.—During the last few years soaps containing resin have come very much in vogue, although it can only be considered an adulterant. They are generally well made (to all appearance), hard, and low-priced, and either pale or brown in colour.

They have, however, a sticky feel, are of little value, and are often exceedingly alkaline.

The pale-coloured sorts usually contain about half as much resin as of fatty matters, while the brown sorts often contain more of resin than of oils and fats, and are also often fortified with chalk, talc, or other mineral substances.

American resin is usually preferred by soap makers on account of its finer odour.

Revalenta Arabica.— A botanical compound name given to powdered red lentils (*Lens esculenta*), Egyptian or Arabian, after being freed from their outer skin, which is indigestible, and mixed with barley-flour. It was introduced about 1845, as a food for invalids. Some kinds contain a little sugar, others salt, and a flavouring ingredient.

Rhine (or Rhenish) Wines.—A general name for any wines produced on the banks of the Rhine, especially the *still* white wines of that region, formerly known as *Hock*.

Rhodium Oil.— An essential oil of a bitter, balsamic flavour, distilled from various species of *Rhodorhiza*.

Rhubarb. — Da. *Rhabarber;* Du *Rabarber;* F. *Rhubarbe;* G. *Rhabarber;* Ind. *Rawund;* It. *Reubarbaro;* Sp. *Ruibarbo;* Sw. *Rabarber;* Port. *Rhuibarbo;* W. *Arianllys.*

There are many kinds of rhubarb valued either for their roots or stalks; but the three most common are (1) *Rheum palmatum*, the roots of which constitute the Chinese varieties, and this yields the best quality for medicinal purposes. (2) *Rheum officinale*, found in South-east Thibet by French missionaries. This valuable plant was introduced into England by the illustrious Daniel Hanbury, and has been grown at Bodicote, near Banbury, for the sake of its roots since 1873. The above are, however, purely medicinal plants. (3) Common garden rhubarb (*Rheum*

rhaponticum) is a Siberian plant. It has been grown in England since 1628 for medical purposes; but its leaf stalks have only come into general cultivation and use as fruit since about 1835. Although conventionally termed "fruit" and eaten with sugar, this rhubarb is but a vegetable. It possesses a convenient quality of combining well with the flavours of other fruits, and freshening them up with its citric and malic acidulous virtues, besides increasing the bulk; but above all, perhaps, it comes in season earlier in the spring than any other acid fruit. Early *forced rhubarb*, of beautiful pink colour and delicate texture, is easily cultivated in any garden, by cutting in two halves an empty sugar cask, and placing them like buckets over the well-manured plant, at the beginning of winter, with a covering of straw or manure to keep it warm.

Forced market rhubarb is often very bitter and unpleasant; the best varieties are, perhaps, the *Linnaeus* and *Victoria*. Some varieties are grown which are really unfit for table use. As a rule, the smaller the rhubarb and the poorer the land on which it is grown the better is the flavour.

A good deal of early rhubarb is raised in Yorkshire, particularly around Leeds, where the waste steam from the factory boilers is often utilised to produce the artificial heat required. It is commonly cultivated in long, low, darkened sheds. Years ago, rhubarb leaves were boiled, and used like spinach.

Rhubarb is a capital purifier of the blood, but contains oxalic acid in its stalks, and must be injurious if eaten continuously.

Rhubarb, like so many other things, should not be grown too long on one plot of land. Young healthy crowns always force more readily and give better produce than old ones. Fresh plantations on good ground (which cannot possibly be too rich) will soon make useful clumps, and it is better to plant a few annually to meet requirements, as the old forced stools are of little or no use.

Rhubarb Jam.—This is usually sold at a very low price, but there is very little demand for it, unless early in the spring, when other fruits and preserves are scarce. Rhubarb boiled along with figs and the whole passed through a sieve makes a very agreeable preserve, tasting not unlike Apricot Jam.

Rhubarb (Tincture of).—As above mentioned, there are several species of rhubarb grown largely in Western China, Persia, and Eastern Thibet, for the medicinal virtues—stomachic and purgative—of their dried roots. The principal sort known to druggists as *Rhei Radix*, is obtained from *Rheum palmatum* and other species growing in North-West China and Eastern Thibet, and chiefly exported from Shanghai. It is known in commerce as Turkey or East India rhubarb, owing to the fact that it was formerly customary to convey it by caravan through Persia to the Syrian ports for exportation, or to send it from China to Calcutta, whence it was shipped to Europe. The official dose is 15 to 30 grains for a single dose, or 3 to 10 grains for repeated administration.

The more modern and correct appellation for this drug is *Chinese Rhubarb*. It is a curious fact that the Chinese are still able to keep secret the particular species of the plant yielding the most valuable kinds.

In Tincture of Rhubarb, as sold in the shops, the two most expensive ingredients are alcohol and saffron, and if these are deficient or there be excess of water, the retailer is liable. There should not be less than ¼ oz. of saffron to the pint. Glucose has been detected as an adulterant.

Rhubarb Wine.—This is not a very popular wine. It is generally home-made in May, when the garden stalks are fullest of sap. The stalks are first crushed, and soaked for some time in water, after which the liquor is merely strained and sweetened. Sometimes it is flavoured with a little lemon or a few currants. Brandy also is occasionally added, but it is not necessary. The liquor is usually left in cask, with bung open, for a month or so, then closed up tight, and in two or three months more it will be ready for use.

Rice.— Ar. *Aruz;* Da. *Riis;* Du. *Rijst;* F. *Riz;* G. *Reis*: Hin. *Chawl;*

RICE—(continued).

Ind. *Akki;* It. *Riso;* Mal. *Bras;* Pers. *Berung;* Pol. *Ryz;* Port. and Rus. *Pscheno Sarazinskoe;* Sp. *Arroz;* Sw. *Ris;* W. *Reis.*

There are upwards of 1,300 names of this cereal, and several thousand distinct forms and shades of colour, arising from different climates and soils; but there are two principal divisions—viz., "upland," and "sea-level" rice. There is no other vegetable product so widely consumed. It forms the staple food of one half of the human race, and its quality or market value is ordinarily judged by comparing a number of samples as to colour, size, thickening properties, etc.

RICE.

The plant (*Oryza saliva*) very much resembles the oat in shape and colour, also in the figure and disposition of its leaves. The panicle also, which terminates the stem, is composed of small flowers (distinct from each other) which have four unequal scales, six stamina, and one pistil, surrounded by two styles; this pistil becomes a white seed, extremely farinaceous, and covered with two interior scales. In some of the wet, marshy, tropical countries the wild plant is as common as grass, but rice has been cultivated in India and China from time immemorial, and is now raised in most of the hot and moist climates. Rice is still the chief food of the people in China, Japan, Burmah, and Siam, but in India *millet* or *dari* is more largely consumed.

Rice is probably the staple food of perhaps 80 or 90 millions out of the 260 millions of people in India, but millets and pulses with a little rice, wheat or maize, as luxuries, are the food-stuffs of the great bulk. Even the rice-eating people rarely eat rice alone. One of the muscle-forming ingredients in their diet is the pigeon-pea (*Cajanus indicus*). See *Dhal.*

After *rice* has been sown it requires flooding, either naturally or artificially, with several inches of water, till it sprouts.

Each seed sends up several stalks, and as the ground has to be kept clear of weeds, the labourers often sink to the knees. This dampness, and the burning sun overhead, renders such labour intolerable to European constitutions. The plant grows one to three feet high, and two crops are often obtained in a single year.

The growths best known in this country are Aracan, Bengal, Carolina, Japan, Java, Moulmein, Patna, and Rangoon. Japan has been sending rice to Europe in increasing quantities these last 25 years, and now ranks next to India as an exporter of rice to London, being followed by Siam and Saigon.

Superior qualities of rice are grown in Italy and Java, but the quantity is small, and the latter is much broken and badly dried. In Burmah the area under rice cultivation is about 4,000,000 acres, and a large quantity comes to this country, most of it ready cleaned (see p. 115). Labour and other expenses being much lower in Burmah, it can be, and is, cleaned there much cheaper than in England.

The export of rice from Corea began in a small way in 1886, and is increasing. The quality is very good, some of it being considered almost equal to the best Japanese, but the native method of

RICE—(continued).

cleaning—pounding in mortars and winnowing—leaves much sand in the rice.

Indian rice is exported in three classes, viz.:—*Table rice*, *Ballam* (so named after the small boats in which it is conveyed for shipment), and *Moonghy*, a common and inferior quality. The rice from the Southern States of America is, perhaps, the best, being sweeter, larger, and better coloured than that from Asia, although much of that sold as Carolina really comes from Patna and Berbice. (See *Carolina Rice*).

Louisiana grows 8 or 10 million bushels a year, and over 85 per cent. of the crop is shipped to New Orleans, where it is cleaned by the latest and best machinery. The greater part of Louisiana rice is now produced on the prairie lands in the south-west parishes of Acadia, Vermilion, Calcasieu and St. Landry. Twenty years ago the cultivation was entirely confined to the river parishes, but most of these lands have again returned to the culture of sugar cane.

Canadian Rice is a farinaceous substance made of the grass *Zizania aquatica*, which was unsuccessfully introduced some years ago, both as a food and as a paper material into the Lincolnshire fens.

Queensland is the latest field for rice culture. Successful experiments have been made during the last three or four years with the White Java and Batavia Flint varieties in the Logan district, and mills have been erected on Pimpana Island. About 1,000 acres are now devoted to rice in different parts of that colony.

Rice may be kept in store for many years without waste, but may require a little water to wash the must off it; in fact, if eaten frequently before being kept one or two years it is liable to cause indigestion, diarrhœa and rheumatism. Some Indian authorities interdict its use for three years.

If used too frequently it is apt to produce scurvy.

When rough, or in its natural state in the husk, it is called *Paddy* or *Paddee*, but before coming into the retailers' hands it is softened and husked in a mill or "rice-pounder"—a sort of mortar, studded inside with metal, to prevent the pestle crushing the grain while rubbing off the skin or husks—after which operation it is quickly dried, and is then ready for use.

"*Hull Paddy*" is a term denoting rice grown on the hillsides or uplands in Malacca, as in contradistinction to the ordinary paddy grown in marshy or low river-bottoms. The grain is usually less plump than swamp paddy, but is of good flavour, and mostly consumed by the Malays and Chinese labourers. The term "Rice" (Ind. *Akki*) is only properly applied to the seed when denuded of the husk or shude and inner cuticle.

Great Britain imports about six million tons yearly, about half of which is re-exported to various other countries. Rice is not a very nutritive food; it contains only seven or eight per cent. of gluten, and less nitrogen than any other grain, but is a heat producer and forms more fat than muscle.

It is not generally known that a large part of the nutriment in rice is thrown away before the grain is in shape to be offered to consumers. The rice, in fact, has three parts—the husks, the inner cuticle and the grain itself, as it is ordinarily offered. The inner cuticle is cuticle in fact, as well as in name, growing fast to the grain. It has to be worn off by friction, and forms a residue, often called *rice-meal*, which is utilised as cattle feed. The cuticle is rich in gluten, or protein, and in China is eaten with the rest of the grain. The possibilities of awakening the general public to a realisation of the nutritive value of rice without this cuticle removed have not been considered by millers and rice men hitherto, but the man who makes the shredded whole wheat biscuit in Worcester, U.S.A., is now considering the chances of success that a corresponding product made of rice would have, and, if the experiment proves a success, a new article of food may be added to the grocers' trade.

The inner cuticle of the grain, while

it is very hard, and grows quite tightly on the grain itself, splits away without much difficulty when subjected to an end-to-end pressure, leaving the white grain perfectly clean. If the whole rice were to be offered for general use, it would have to either go through this breaking process, or would have to be partially steamed, as the outer portion cooks much more slowly than the inner, a difficulty which the ordinary cook, often unsuccessful with rice, might not be able to overcome.

It is, however, especially adapted to the wants of a meat-eating people like the British, and is one of the lightest, most wholesome, and digestible foods we possess, imposing very little work on the digestive organs, though sago is still easier to digest.

Several analyses of good Indian rice show an average of moisture 13.50 per cent.; starch, 78.10; nitrogenous matter, 7.41; fat or oil, 0.40; and of ash, 0.59 per cent.

According to Dr. Konig, the nutritive value of 1lb. of rice is about equal to that of 4lbs. of potatoes. It should, however, be properly cooked. One good way is to rub the rice vigorously between the hands in cold and frequently renewed water until the water remains quite clear; then place it with plenty of water on a quick fire, and leave it to boil ten or fifteen minutes. The grains should then be soft, but not split, and should be poured into a strainer. Cold water is again run over it till the water comes from it quite clear, and the rice should afterwards be placed on the hot stove top, as is done with boiled potatoes, shaking occasionally to assist the process of drying.

Another way is to thoroughly wash the rice, first in cold water, next in tepid, and then in hot; place it in a well-closed vessel, and add for every cup of rice two of water.

Bring this rapidly to the boil, and let it continue boiling about an hour, until all the water has steamed away; and, finally, put a few pieces of butter on the rice before taking the vessel off the fire.

Several intoxicating liquors are made in China and Japan from rice, such as *Rice Wine*, Japanese "*Saké*," and *Samshu* or "*Samshoo*," a kind of Chinese arrack. (See *Chinese Spirits*.) Rice is also largely used in British distilleries.

Special Firms: Hedley, Gamble & Crosfield, Circus Street, Liverpool; Morris & Jones, 13 to 19 Sir Thomas Street. Liverpool.

Rice Coffee.—A descriptive name in America for *raw* coffee berries.

Rice Flour.—(See also *Ground Rice*.)—Rice ground very fine; much finer than ordinary "Ground Rice." Chiefly used in cookery, making cakes, puddings, gruel for children, but also in preparing baking powders, custard and egg powders, face powders, etc.

Owing to the small quantity of gluten it contains it cannot be conveniently fermented and made into bread.

Rice flour and ground rice are both liable to be adulterated with the flour of other grains, as maize and wheat, but even two per cent. may be detected by adding a saturated solution of picric acid to equal parts of the flour and water, when a precipitate occurs in about an hour, but there is no precipitate when rice flour only is present.

Large quantities of rice flour have been used in adulterating pepper, mustard, ginger, curry powder, and pudding spice; also liquorice, and other similar goods.

Rice Meal, Dust, or **"Polish."**—A feeding stuff for cattle, consisting of the red skin or bran, damaged grains, and refuse of rice, after the husked grain has been cleaned for the market. (See previous page.) Thousands of tons come to England from the rice mills of India and Ceylon, but a large quantity also comes from the Southern States of America, where it is known as "Polish." When the outer husk of rice or "shude" has been removed, the rice is of a reddish colour, and to render it white and bright, it has to undergo a further dressing by friction in the mills. It is in this scouring and smoothing operation that the rice-meal is obtained from the grain. It is equiva-

lent to the "sharps" or pollards as separated from wheat, only with rice the grain is polished and not crushed. Few persons seem to know that very excellent brown bread may be made from a mixture of one part of rice-meal in four parts of ordinary wheaten flour. A considerable amount is used in Scotland for making *Griddle* or *Batter Cakes*. Wholesale prices, 84s. to 94s. per ton.

Rice Paper. — A delicate and transparent kind of drawing paper, made by the Chinese—not from rice nor rice straw, as is often erroneously imagined, but from the pith of a plant called by the Chinese *Tactada* or *tung tsan* (hollow plant), and by European botanists *Fatsia* or *Aralia papyrifera*. This plant grows wild and in great profusion in the Island of Formosa as well as in China and Corea. The pith, carefully removed from the stem of the plant, is first cut spirally with a sharp knife, then unrolled, spread out, and pressed flat.

Ricotta. — An Italian food made from whey. (See *Italian Cheese*, p. 488.)

Ridge's Food. —An analysis of this indicates a mixture of various flours averaging the following percentages:— Albuminoids, 9·65; Carbo-hydrates, soluble in cold water, 8·12; insoluble in cold water, 75·47; fat, 1·95; and salts, 1·13.

Riso (Gold Medal) Flour. — See *Self-Raising Flours*.

Gardner's patent "Rapid" Sifter and Mixer, freely used for above. Prices, from 50/- to £100. Catalogues from Wm. Gardner & Sons, engineers, Gloucester.

Rocambole. — An alliaceous plant (*Allium Scodoroprasum*) used in the northern parts of Europe for flavouring foods, like the shalot.

Roche, or Roach Alum.—Should be written and called *Rock Alum*. It is a highly refined and purer kind of alum, prepared by a process called *roaching*.

Rochelle Salts, or Powders. — These are a mixture of tartrate of potash and soda, or, in other words, carb. soda and cream of tartar, and the mixture is called after the name of the chemist who first used them. They act as a mild aperient.

For retail purposes they are usually put up, like seidlitz powders, as a medicine, and consist of carbonated soda in one paper and cream of tartar (potassium) in the other. When the two are mixed in water the carbonic acid is set free, and the liquid foams up like soda-water.

Rock Cocoa. — A mixture of powdered cocoa, flour, and sugar made into a paste and coloured to imitate pure cocoa. It is finally run through a streaking machine and dried to solidity.

Rock, or Tree Moss.—See *Lichens*.

Rock Salt.—F. *Sel gemme;* Port. and Sp. *Sal en bola*. (See also *Salt, Bay Salt*, etc.)

Found in fossil beds, and in large masses, more or less connected with brine springs. Rock salt is evidently a true sedimentary rock, owing its origin to the slow evaporation, in the course of enormous lapses of time, of salt lakes or inland seas once fed from the waters of the ocean.

Rock salt beds occur in various parts of England, Spain, France, Italy, and Poland, and most countries of the world, but it is remarkable that none have yet been discovered in America. The largest mine known is one near Cracow, Hungary. It is known to be 500 miles long, 20 miles broad, and 250 feet in thickness. It lies about 500 yards deep, has over 500 miles of streets and galleries; also a chapel, pulpit, statues, etc., cut out of the solid salt.

The chief mines in England are those of Droitwich, Northwich, Middlewich, and others in Worcestershire and Cheshire. Most of the white salt manufactured is obtained from rock salt, either by direct quarrying or mining of the solid rock or by the pumping of brine—*i.e.*, rock salt partly dissolved, either naturally by surface water, or by water purposely conducted down into the salt beds.

In Worcestershire the salt beds are very extensive, and have been regularly worked since 1670, but Cheshire rock salt, in its solid state, as raised from the mines, is not pure enough for culinary uses, and, to purify it, it is dissolved into sea water and afterwards evaporated into crystals. This process makes it a little dearer than the salt obtained from springs.

Salt springs in old times were called by the name of *wich*. Droitwich was originally a "wich" to which the name of *Droit* was added to designate a certain *legal*, or allowed, brine pit.

The pay of the Roman soldiers in this country at one period being in salt, gave rise to the word *salarium* (salary), and hence the saying so and so is "*not worth his salt*," does not "*earn his salt*."

An average quality of rock salt consists of 3 parts chlorine to 2 of sodium.

Rognons de Coq. — The French name for *Cocks' Kidneys*.

Rolled Bacon.—It is well washed, allowed to hang a day or two and then rolled tightly as possible, commencing with the belly portion and finishing with the length of the back as the outward seam. It is finally closely bound round with string in the orthodox fashion.

The genuine comes from Ireland, but American sides are often rolled and sold in imitation of Irish, although considerably inferior in every way, and only worth about half the price.

Rolled, or Flaked Oats. — F. *Avoine roulée*. (See also *Oatmeal*, *Prepared Foods*, etc.)

These are oats which, after being dried, husked, and softened by steam, are rolled out flat to about the size of a sixpence, and then carefully dried by passing them along an endless woven wire belt over steam-heated pipes. They are next carried to an "aspirator" which cools them and takes out any light or small pieces. The Americans were the first to prepare the oats in this form, but it has since become universally popular. The best system of drying them properly and without breaking up the flakes seems to be that patented by Mr. L. J. Scott.

A number of metallic trays (say eight) are fastened zigzag to a framework, and the series is suspended by springs from a second framework, the whole being enclosed by sheet-iron, forming a hot-air chamber. The trays are driven with a to and fro motion by an eccentric shaft, while a furnace below supplies the necessary hot air; a calorimeter attached to the chamber registers the temperature, which is of supreme importance in drying flaked oatmeal. It is a very ingenious application of simple principles, and not only dries the flakes but secures the flavour and preserves the colour. The material to be dried falls on the first tray, travels slowly over it, and passes gently on to the second, which is inclined the reverse way, and from the second to the third, and so on over the whole series. The material, therefore, is constantly in motion during its course over the series of trays, and thus is thoroughly exposed to the action of the hot air which passes constantly up through the chamber and which is drawn off by a fan suitably placed, together with any moisture given off by material being dried. By a simple mechanical contrivance an equable distribution of the hot air is assured. When the trays are properly adjusted an equal thickness of the material is spread all over, and the material travels slowly and gently without breakage. The advantages claimed are—1. Economy of fuel, the furnace being of small dimensions. 2. The material to be dried is constantly exposed, and is thoroughly and uniformly dried. 3. The absence of noxious gases to injure the flavour of the flake, the heated air in the chamber being so regulated that no unpleasantness whatever is experienced when breathing the air discharged by the exhaust fan. 4. An equable temperature is easily maintained throughout the process.

Special Manufacturers. — Keen Robinson & Co., Ltd., Garlick Hill, London, E.C.

Roman Candles.—A kind of fireworks, consisting of a long tube filled with various substances, which, when a

light is applied, are discharged in the air like burning balls, of different colours, representing stars, suns, etc.

Roman Cement. — See *Portland Cement.*

Rope. —See *Cordage*, p. 297.

Roquefort Cheese.—F. *Fromage de Roquefort.*

This celebrated cheese is considered one of the richest and best French kinds. Pliny mentions it in his writings. It is said to have been made by the same process for over 2,000 years at the little village of Roquefort in the Commune of that name, a mountain slope in Aveyron, arrondissement of St. Affrique, in the South of France.

The bulk of the cheese is made from the milk of ewes of the Larzac breed, generally about 450,000 in number, their food consisting mostly of herbs found in the stony pasturage, occupying some 60 square leagues, on the rugged mountains of lava in that district; but of late years the demand has increased, and both goats' and cows' milk are now used as well, without any material difference in the quality of the product. It is not the milk, nor of any special preparation of it, upon which the character of the cheese is thought to depend, but upon the unique process of curing. Some scientists assert that the reason why particular cheeses can only be made with success in particular dairies is, that the apartment where the cheese in question has been made for many years reeks with the organism which is necessary to produce the particular flavour and aroma required, and it certainly often happens that a new dairy has to go on working for a considerable period before the atmosphere and surroundings get into a proper condition to produce the cheese satisfactorily. Anyhow, in this district, whether cows', sheep's, or goats' milk be used, the cheese is always Roquefort, and is of a pale white colour with a blue mould. It somewhat resembles "Stilton," but is scarcely so rich, and possesses a peculiar pungency of flavour. Ordinary size, 8 inches high, by 4 inches in diameter, and weighing 4lbs. to 6lbs. each.

Average composition (fresh): Water, 11·84; caseine and albumen, 85·43; fat, 1·8; lactic acid, 0·88; ash, 11·84.

Thus *Roquefort* contains less fat and much more casein than English or Neufchâtel Cheese.

In the manufacture of Roquefort cheese the sheep and goats are milked twice a day: in the evening, after their return from the pastures, and after they have been allowed to rest for an hour or so. The evening's milk is heated almost to the boiling point, and then is set aside. In the morning it is skimmed, heated to 98°, and mixed with the morning's milk for coagulation. The curd is well kneaded with the hands and pressed in layers into moulds with perforated bottoms.

The blue mould marks so stringently exacted by connoisseurs appear to be due to two causes; first a ferment produced by artificial introduction of the germs of the *Penicellum glaucum* which are readily obtained by making a bread of wheat and barley, or rye flour, with vinegar and strong yeast. This bread is baked for a long while, then allowed to become mouldy, and afterwards ground into a fine bluish-green powder, which, when moistened with water, is mixed with the curd. The second and perhaps the more important cause is the storing of the cheese in the natural grottoes of the Valsassina, which are very damp, and form an immense cave —a perfect cheese citadel—in the limestone rock at Roquefort. Here they are cured and acquire their fine flavour and mellowness. These caves probably impart to the cheese its unchanging character. Ages ago the South of France was undoubtedly convulsed by gigantic volcanic disturbances, and in the Cevennes mountain range are numerous caverns whence issue hot springs, sulphurous and bubbling with gases, which bear testimony to the fires which still exist in the depths below. The interior of the Larzac mountain on which Roquefort stands has evidently been hollowed out by similar volcanic forces. Hence the series of caves, formed of vast masses of rock thrown together as if dropped from a great height and all

ROQUEFORT CHEESE—(continued).

connected with each other, and with some subterranean outlet by which constant cool currents of air, always of the same temperature and degree of humidity or dampness, flow in a never interrupted stream. These air currents are controlled by closing up some passages, leaving openings which may be closed or shut altogether as the wind outside may make desirable.

The caves at Roquefort are controlled by a company (*Les Caves Réunies*), which contracts to buy the cheese from the numerous agriculturists for a hundred miles around, at a fixed price.

The temperature of these honeycombed caves, some of them five storeys high, averages 30 to 47 deg. Fahr., and in these cold, damp, and dimly lighted caverns employment is found for 300 or 400 women called *cabanières* (turners) in salting, scraping, and turning these celebrated cheeses. They are paid from £20 to £25 a year in addition to board and lodging. The cave is so damp and cold that they are obliged to wear thick woollen garments all the year round.

About 6lbs. of salt is used for fifty cheeses, and is applied by rubbing a handful of salt on the top and bottom of each.

The caves are fitted with oak shelves, and the cheeses have to be frequently reversed in order that the moisture may be even throughout, and to develop the fungus which has previously been sown in the curd.

In forty-eight hours the cheeses become viscous, and are rubbed with a coarse cloth. In the course of another two days the fungus will appear on the outside in the form of a sticky paste. This is carefully scraped off with knives, together with a thin stratum of crust, and set aside for food.

The cheeses are now sorted out, the most solid ones placed on the floor. In eight days' time they become covered with a yellowish red mould, together with other minute vegetation, which is removed and given to the pigs. The scraping is continued until the character of the mould changes, showing that the curd has altered in its condition and announcing the completion of the cure. Then they are again carefully scraped and wiped and wrapped in tinfoil, to retard evaporation, and are ready for the market.

We thus see that the moulds which form on the cheese are scraped off from time to time, passing successively in colour, in the course of about forty days, from white, through blue, to a reddish tint, when the cheese is considered mature and ready for use.

A machine for brushing the cheese has recently been invented, and this saves much hand labour and waste.

Another is used for hastening the ripening; this machine or press just the size of a cheese is fitted with 60 to 100 fine needles, and a dozen cheeses can be perforated each minute. The mould damp and air of the cave are thus rapidly admitted, and the method is said to answer perfectly.

The cheese cured by the above society (*Les Caves Réunies*) fetches about 10 per cent. higher price than any other make of "Roquefort." It is imported into England from February to May, and from September to end of December. Every care has to be taken with it, as it is very tender and easily broken. It requires similar treatment to gorgonzola, but should be cut with a thin-bladed sharp knife.

The yearly product is simply enormous, and they are sent to all parts of the world.

Like so many unique productions, it owes its existence to an accident. A shepherd lad, so runs the legend, left a large piece of bread and cheese, prepared from the milk of his own flock, in the cavern. Returning months afterwards, he found that the cheese was not dried up or rotten, but tasted better than before, while the bread crumbs left in contact with the cheese had produced the now famous greenish blue veins of Roquefort. The villagers tested and found the story true, and thenceforth submitted all their cheese to the same process. But how ordinary ewes' milk cheese is transformed into Roquefort by being stored in the cave is an un-

solved problem. By the happy natural combination of heat and moisture, always constant, the peculiar results are achieved. If the temperature changed the curing would change; if the moisture was greater it would make the cheese so soft that it would not hold together, and if less it would be too dry. No efforts of art can even partially attain the success of nature in the production of Roquefort cheese, and the worth of the cavern to the little hamlet is seen in the yearly production of cheese—more than ten million pounds.

Rose Essence.—Easily prepared by mixing 40 to 50 drops of otto of roses with 12 ozs. of rectified spirit.

Roses, or Candied Petals —See *Crystallised Fruits*, *Preserved Flowers*, etc.

Rose Oil.—See *Otto of Roses*.

Rose Soap.—F. *Savon de la Rose.*

A superior toilet soap, made from either white tallow soap, or lard soap, and coloured with a little vermilion. The perfume consists of 40 parts oil of roses, 15 of cloves, 10 of cinnamon, 30 of bergamot, and 10 of oil of neroli. Some makers use 2¾ ozs. rose oil, 2½ ozs. geranium oil, and 1 oz. of cinnamon oil to each cwt. of soap.

A very superior rose soap may be made from 60lbs. of white curd soap (if of good tallow) and 40lbs. of olive oil soap. Colour with 3 ozs. of vermilion, in fine powder, and add 15 ozs. of either of the above perfumes.

Rose Water.—Lat. *Aqua Rosæ.*

This is commonly distilled from the petals of roses grown at Mitcham and elsewhere; also in Holland and round Paris.

According to the British Pharmacopœia, this is ordered to be prepared from the Damask Rose, but there is no official description to be found of this particular rose, and most of the rose water is imported from abroad. Although usually stated to be "triple," there is no standard of this, and no particular method of testing it, except judging of its aroma.

Rosellas.—The name for the *Hibiscus cannabinus* in India, also for *H. sabdariffa*. Its calyxes as they ripen become fleshy, are of a pleasant acid taste, and are much employed in Queensland and other parts for making tarts, jellies, and refreshing drinks. It is imported into England in jars and bottles.

Rosemary Oil.—F. *Essence de Romarin.*

A very limpid oil, obtained by distillation from the bushy plant, *Rosmarinus officinalis*, a native of the Mediterranean area, where it is usually found in warm situations near the coast, and has long been cultivated in this country for the sake of its flowers as well as its volatile oil. (See p. 232.) It is, however, more largely produced in the Island of Lesina, Dalmatia, and exported from Trieste.

Rosemary oil is used both as a perfume and as an external stimulant.

It is colourless to pale green, and more aromatic than sweet. It boils at 331° to 334° F., and congeals at 81° to 86° F. Frequently adulterated with turpentine; but pure rosemary dissolves in an equal volume of 90 per cent. alcohol, while if adulterated with turpentine it requires much more.

Rosin and Rosin Oil.—See *Resin.*

Rossolio, Creme de Rose, etc. (sometimes spelt *Rosoglio*, *Rossolis*).—Crême de Rose is an Adriatic liqueur flavoured with the oil of red roses, and further coloured with cochineal to a very bright red. It takes its names from the Italian "*ros solis*" (sun dew), used in its manufacture.

It is said to be an imitation of *Rossolis*, a liqueur very popular in France in the sixteenth century, and made of burnt brandy, sugar, and the juice of sweet fruits, such as cherries, mulberries, etc.

Orange Rosoglio is a red Italian liqueur produced on the Adriatic from the rind of the orange, and flavoured with flowers or fruits, especially orange blossoms.

In Russia it is made with spirit, sun dew (*Droserosp*) orange and rose flowers.

These liqueurs are very popular in Turkey and Italy; Lara and Turin are quite celebrated for their "rosolios."

Rota Tinto.—See *Tent Wine*.

Rotten-stone.— Sometimes called *English Tripoli*. A soft, earthy stone, easily cut, or scraped into powder, generally grey, but sometimes reddish, or blackish. Much used by housekeepers for polishing and cleaning brass and metal utensils, also by lapidaries and other mechanics for grinding, polishing, and even cutting stones.

Found near Bakewell, in Derbyshire, also in South Wales and near Albany, New York.

It is supposed to be formed of decomposed slate, clay, siliceous limestone, or shale, by the percolation of water, the finely distributed particles of silex remaining as a spongy mass. It really consists mostly of alumina, with some 10 per cent. of carbonaceous matter and silica.

Wholesale prices, 8/- to 10/- cwt.

Rouge.—See *Jewellers' Rouge*, also *Toilet Rouge*.

Roussillon Wines. — A class of strong wines, produced in the ancient province of that name in the Pyrenees, in the South of France. They are of a dark red colour, and usually contain about 12 per cent. of absolute alcohol. One of them, *Masdeu*, is a full-bodied, bright red wine, not unlike claret, and yet so resembling port that a good deal is sold and used in England as port. It was the red wine of Roussillon which formed the basis of the famous "Bristol" ports, so well known in the 18th century.

Roussillon wines, being quite fruity and rich in alcohol, are often used at Cette to improve weak light-coloured wines, which, after being thus manipulated and flavoured, are often sold as "Vintage Port."

Rout Cakes (pr. rowt.). — Rich, sweet cakes for evening parties. Usual ingredients and proportions: — 2lbs. flour, 1lb. each of butter, sugar, and currants, 3 eggs, ½ pint milk, 2 glasses white wine, and 1 glass brandy. Drop them on a tin plate and bake.

Rowland's Kalydor seems to be a mixture of corrosive sublimate, almonds, and rose water. Recent analyses show that the mercury is now omitted. It seems very like *Rowland's Lotion*. (See *Kalydor*.)

Royal Cloves.—(See also *Cloves*.)—An abnormal state of the clove, in which it has an unusual number of sepals and large bracts at the base. Once held in very high repute, from their rarity and supposed virtues.

"Royal Crown," } Brands of
"Royal Dane," } Danish Bacon.

The rapid growth of the export trade in Danish bacon appears to have sprung out of the adverse policy started in Germany by Bismarck. A duty of 6/- on imported pigs compelled the Danes to keep their pigs at home, and form co-operative bacon factories, the first of which was formed in 1887 by a number of farmers in the district of Horsens. The closing of the German ports to live swine from Denmark, about this time, afforded a further impetus to the movement. Prior to the above year the exports never exceeded 15,000 tons a year, but they have rapidly increased to over 50,000.

There are now about thirty-five bacon factories at work. The most popular classes of pigs fed are descended from the large and medium *White Yorkshire* breeds, and the above-named brands of bacon are of the highest quality.

Sole Agents.—George Wall & Co., Limited, Liverpool and Manchester. (See advt., page 10.)

Rubber Stamps, etc.—See Index.

Rubsen Seed and Cake.—The seeds of *Brassica præcox*, value about 50/- per quarter (416lbs.). On the Continent an oilcake is made from it.

Rudesheimer (pr. rood sime-er).—A very choice German white Rheinish wine, or *Höck*, of soft and delicate flavour, only second to *Johannisberger*. It derives its name from Rudesheim, a small district on the right bank of the

Rhine, near Bingen, where several varieties and qualities are made. The vines yielding it are said to have been planted by Charlemagne. That distinguished as *Rudesheimer Berg* is perhaps the best.

Rum or **Rhum.**—Da., Pol., Rus., and Sw. *Rom;* Du., G., and It. *Rum;* F. *Rhum;* Port. and Sp. *Ron.* (See also *Pineapple Rum.*)

Rum, or *Taffia*, is the West Indian name for a spirit distilled from fresh juice of the sugar cane, or from the uncrystallizable molasses, scum, or refuse which occur in boiling raw sugar. These latter substances, being first diluted with a sufficient quantity of water, are fermented and then distilled in the ordinary way.

It is chiefly made in the East and West Indies, especially in the Islands of Santa Cruz, Antigua, Grenada, and Jamaica, but considerable quantities are also made in Brazil and in British Guiana.

The Asiatics mix with it the bark of a thorny variety of acacia called "pattay" to flavour it, and in the Isle of France and Madagascar, where it is called *Guildive*, it is flavoured with the leaves of trefoil.

A quantity is distilled in France from beetroot, sugar, and molasses; and in the United States a fine quality, known as *New England Rum*, is wholly made from molasses.

Jamaica rum is still considered the best in the market, but that from the Leeward Islands is an inferior quality. In its original state rum is colourless, with a peculiar, unpleasant flavour, which, however, is removed by the use of charcoal and lime, and is thus sold as *White Rum;* but it is generally coloured red or brown with caramel (burnt sugar), and is often flavoured with certain kinds of fruit, such as that of the guava tree, which are fermented along with the other material. (See also *Pineapple Rum, Bav Rhum*, etc.)

When rectified to a strength nearly equal to spirits of wine, it is called *double-distilled rum;* and perhaps the best state in which rum can be imported or preserved is that of rectified spirit, as it may thus be conveyed in one-half its usual bulk, and afterwards reduced to the proper degree of proof strength by means of spring water.

Pure rum, however, as made in the West Indies, is not often met with in commerce.

Negro Rum is an inferior quality, made from the *débris* of the sugar cane. It always has a sharp, disagreeable acid flavour.

The ordinary articles as drunk in England are mere mixtures of British spirit—or "silent" spirit, with small quantities of genuine rum, or *essence of rum*—a butyric compound, made for the purpose of preparing fictitious rum—and, indeed, it is probable the greater proportion contain no genuine rum at all. An overpowering flavour of peppermint is often noticeable. Genuine rum improves greatly with age, acquiring a fine, mellow, soft flavour, while *new* rum is strong, rough, and injurious to health. Rum must not be sold weaker than 25° under proof without a special declaration of its strength.

Rum Shrub.—A sort of home-made cordial in which rum is the chief ingredient.

An excellent kind is easily made by soaking in a gallon of rum a dozen or so each of sliced Seville oranges and lemons. After thus digesting for two or three months, add sugar and water which have been boiled and skimmed, and then strain for bottling. Sometimes a little lime-juice, milk, or other fruits are added.

"Runic Brand" Bacon. — See advt. of George Wall & Co., Limited, page 10.

Runnet.—See *Rennet.*

Rusa Oil.—See *Ginger-Grass Oil.*

Rushes or **Flags.**—F. *Joncs.*

These names are applied to a great number of species of plants of which the *Juncus palustris* is the chief, which make a rustling noise when moved by the wind. In former times they were used for strewing on floors before carpets were invented.

In some districts the rush is peeled and the pith used as a wick for oil lamps.

Rush-seated chairs, rush mats, baskets, etc., are all familiar examples of the use of rushes, or "flags," as the material is commercially designated. These flags are also used largely by coopers to prevent leakage in the joints of casks.

Grow in wet marshy places, and popularly used for plaiting into mats, bags, baskets, hassocks, seats for chairs, etc.

Rush Lights and Rush Candles.—Tallow candles with rush wicks. The Rush Light (see also p. 172) was in olden times introduced as an improvement upon the *torch*, Oribus light, or resin candle, and was simply a dried and partially peeled rush.

Two hundred and fifty years ago, when Milton acted as secretary to Oliver Cromwell, his "gentle taper, though a rush candle," consisted of a rush peeled of its skin, with the exception of a strip or two which were left to consolidate the pith. That also was steeped or drawn through some fatty substance, or melted grease. This kind of candle—"which burneth long"—was gradually improved into the dark-coloured tallow candles with rush wicks which our grandmothers well remember, but which were eventually succeeded by "dips."

Rusks.—F. *Biscottes de Paris.* (See also *Prepared Foods, Biscuits*, etc.)

A species of biscuits, of which there are several varieties.

As "*Biscottes*," they are made and consumed very extensively in Holland, and especially in Brussels.

Their popularity is chiefly owing to their supposed digestibility and wholesomeness. Ordinary rusks are made from similar ingredients as common buns or tea cakes—flour, milk, butter, and sugar. They are made very light and spongy, then cut into particular shapes or slices, and in baking are browned on both sides, and finally dried for 3 or 4 hours in a slower oven.

Russet-brown Boot Polish.—See p. 147.

Russets or **Broadings.**—Very excellent kind of winter apples, with rough skins, and are so named from their colour, which is of a reddish brown, and a peculiar flavour approaching that of the pear.

The English and American russets are general favourites, especially for eating raw. They are not so highly esteemed for cooking purposes, but are the best for keeping. *French Russets*, similar in colour, but rather longer in shape, are much sweeter, and somewhat woolly and insipid, lacking the exquisite acid flavour of the first-mentioned varieties.

Russian Leather Perfume.—An empyreumatic oil, obtained from birch bark. (See *Birch Tar Oil.*)

Russian Wines.—The vine plantations in Russia cover some 465,000 acres, almost all in the regions of the Caucasus, Bessarabia, Crimea, and Odessa, also in the Don Cossacks territory, all in Southern Russia, and the production of wine is about 54,000,000 gallons yearly; but Russian wines are not very often seen in England. Being largely diluted, they do not keep well. Then, so much falsification is carried on, that very little—perhaps one-third—is worthy of the name of wine; the remainder can only be described as an acid drink. But the vineyards of the Caucasus are very fertile, and capable of producing wines approaching Burgundy. The Caucasian wines are usually rich in alcohol, especially those from the province of Erivan, and blend well with the white wines of Bessarabia.

Turkestan is becoming a rather important wine centre. In the Crimea the vines receive most careful attention, and yield very satisfactory substitutes for Burgundy, Sauterne, and Medoc.

Indeed, wine is now produced all along the coasts of the Black Sea, and it seems a pity that Crimean wine cannot be introduced to the English market, for which it is well suited as a table wine.

It is not what is called a highly-bred wine, but is quite as good, or even better, than the class of claret ordinarily drunk; whilst a large variety of wines, both white and red, something like clarets, hocks, burgundies, Rhine wines, sauternes, and various others, can now be had at prices which would allow them to

be sold at a very moderate price in England.

Sparkling wines, in imitation of the French champagnes, are also made at Riga, St. Petersburg, Moscow, Bessarabia, and a few minor places, but they only fetch 2/- to 6/- a bottle.

The Cossacks make a very agreeable, light, sparkling wine, which is sold at about 9d. a quart.

Donskoie Champanskoe, a sort of champagne, is said to be the best.

Gumbrinskoe is a sweet wine grown in the Gumbri district of the Caucasus.

Kahetia, red and white, are both produced in the district of that name, east of Tiflis. They are very popular throughout Transcaucasia; but being usually kept in skins made tight with naphtha, these wines generally have a strong flavour of leather and petroleum.

The total yearly production of wine in Russia is estimated at about 26 million roubles. In some parts of Russia, particularly in Poland and other regions densely populated by Hebrews, a factitious wine is made of raisins. Its preparation is very simple. The raisins are finely chopped, put into a vat, and warm water poured on them. The strength of the wine depends upon the quantity of the water used. Generally, for one poud (36lbs.) of raisins, from 5 to 13 gallons of water are used, from which 3½ to 5½ gallons of wine are obtained.

The raisins are left from four to five days to ferment, and then the liquid is poured through a filter, and the wine is ready. Sometimes this wine, which is naturally of a yellowish colour, is darkened with burnt sugar or with black currants. It is very strong, containing about 12 per cent. of alcohol.

Rutabaga. —A name (of Swedish or Lap. origin) for the Swedish turnip. There are several varieties of this species of turnip. They are more nutritious than the common white or yellow turnip, and the leaves are smoother, and covered with a bloom. The root is also longer than broad.

Rye. — Da. *Rug*; Du. *Rogge*; F. *Seigle*; Ger. *Roggen*; It. *Segale*; Pol. *Zito*; Port. *Senteio*; Rus. *Rosche, Sel, Jar*; Sp. *Centeno*; Sw. *Rag*.

This bearded and hardy cereal (*Hordeum secale*), of which the Sicilian *Secale montanum* (a native of the Island of Candia) is the source, is very like wheat in appearance, and also in quality. It grows in colder latitudes than any other grain, unless it be barley, and suits poor, sandy, barren soil. It will resist very severe frosts, and it ripens early.

In Russia, Germany, Holland, and other Northern countries it is still the most important breadstuff. The grain is browner, harder, and coarser than wheat, but the flour is rich in nitrogenous matter; and the bread, although darker brown in colour, and with a sourish taste, is very little inferior to wheaten bread in nutritive qualities. In use, it is often mixed with the flours of wheat, oats, or barley, and makes what is called "black bread."

Rye is not much grown now in England, except as green fodder for cattle, but formerly rye bread was very common.

There are two varieties—the winter and the spring rye. The former is larger than the latter, and is sown in the autumn at the same time as wheat; but the spring variety, which is sown same time as oats, usually ripens as soon as the winter-sown. However, the grain being lighter, the spring kind is seldom grown except where the autumnal crop has failed.

The green plant is excellent food for horses and other cattle; but rye straw, being very tough, is not so much used for cattle fodder as for plaiting bonnets, stuffing mattresses and saddlery, thatching cottages, barns, etc. In Sweden the peasantry live chiefly on rye cakes, which are baked only twice a year, and often become so hard that they have to be chopped or sawn asunder. The meal is often mixed with wheat-flour to make ginger-bread.

In America and some other places the roasted grain is used as coffee. It has been found that rye and chicory, containing, as they do, a large percentage of saccharin, which in the process of roast-

ing becomes caramelled, thus impart to the compound the flavour of coffee to a much greater extent than any other substitute known.

Rye, however, is frequently blackened, distorted, and "spurred" by the peculiar fungus known as Ergot (*Claviceps purpurea*), the *Secale cornutum* of druggists. This "horned rye," if eaten for any length of time, either by human beings, swine, or poultry, produces poisonous effects—causing, in bad cases, mortification in the limbs and death in convulsions. None of the other cereals are so liable to become ergotised as rye. Trouble has been known to arise even from eating *rye bread*. In these instances the grain probably became musty on the stalk, and was made into flour without its mustiness being noticed, although it is from this same mustiness that ergot arises, and paralysis of the extremities may ensue, if much of such bread be eaten. On the other hand, *Ergot of rye* is often employed by physicians as a remedial agent.

In Holland large quantities of rye are used for malting, particularly in Geneva, for the production of *Schiedam*, *Dutch Gin*, or *Hollands*, and the chaff is used for packing purposes. In America whisky is commonly distilled from rye. Rye-flour also forms the basis of a Russian liquor known as *Kvass*, or *Quass*.

S

Sacca or **Sultan Coffee.** — See *Coffee Imitations and Substitutes.*

Saccharin, Sucrol, Dulcine, etc. —(See also *Sugarine*, *Valzin*, etc.)—A white crystalline powder, without smell, but of an intensely sweet taste. It is a coal-tar product, obtained by treating the *toluine* of coal-tar with sulphuric acid so as to form a benzoyl sulphonic amide. The highest quality contains no less than 99·81 per cent. of benzoic sulfinide, and should be free from Para acid. It possesses valuable antiseptic properties, and is preferable in some cases as a substitute for sugar, especially in cases of diabetes, gout, etc.

It is uncertain whether saccharin is quite harmless to the human system, but one of its peculiarities is that, used in association with sugar, glucose, etc., it brings out the flavour of some foods and beverages, such as aerated drinks and beers, and rounds them off better than sugar alone, and also enhances their keeping properties. It is not a true sugar, nor is it in any way nutritive, for it passes through the body unchanged.

It was first discovered by a German doctor named Fehlberg, in 1879, and is mostly manufactured at Magdeburg, but is now also produced by chemical manufacturers in several countries.

It is estimated that the sweetening power of ordinary saccharin is from 200 to 500 times stronger than that of cane sugar—a single grain, dissolved in a gallon of water, rendering its sweetness plainly perceptible. The value of commercial saccharin is regulated chiefly by the amount of true saccharin, absolutely pure sulfinide, or sweetening power that it contains, and by its freedom from foreign substances. The intensity of sweetness is in commerce roughly distinguished as being 270, 300, 450, 500, and even 555 times sweeter than sugar. The figures may not be strictly accurate, but they are arrived at by comparing the taste of a sugar solution with that of a saccharin solution, both being diluted until they are identical in sweetness, or until they cease to be appreciably sweet.

Besides its employment in making aërated beverages, etc., it is also used by explorers, tourists, and other travellers, as being more portable than any other sweetening ingredient.

Dulcine or *Sucrol* is another sweetening power, but only about 200 times sweeter than sugar, although it leaves a cleaner and more pleasant taste on the palate.

"*Saxin*" is a registered name applied to a similar production put up in

tabloid form, and advertised to be 600 times sweeter than sugar. Complaints have, however, been made that Saccharins have a nasty trick of decomposing into a sulphur compound which imparts the objectionable odour of sulphuretted hydrogen; confectioners also complain of the disagreeable behaviour of saccharins when combined with fruit flavours in syrups and cordials.

Germany has, according to a law promulgated Oct. 1st, 1898, prohibited the use of saccharin for the industrial production of beer, wine, etc. This prohibition applies also to all artificial sweetening substances, such as zuckerine, sykose, crystallose, dulcine, glucine, and the like.

Belgium has prohibited the importation, manufacture, and sale of saccharin and analogous substances, and makes an exception only where these substances are imported by pharmaceutical chemists for medicinal use.

France prohibits the importation of saccharin and similar sweetening substances, and their use in articles of food.

Italy prohibits importation and manufacture of saccharin, and products containing saccharin, and permits only the importation for medicinal use.

In Greece the import has been prohibited, and in Russia its use in foods as well as importation is wholly forbidden.

Austria-Hungary prohibits unconditionally the importation of artificial sweetening substances, allowing only the importation of saccharin for medicinal purposes; in that country also the employment of artificial sweetening substances in food is prohibited.

In Spain the importation of saccharin and of any substances containing saccharin as articles of food is prohibited.

The same is the case in Portugal, where an exception is made in favour of apothecaries.

Great Britain prohibits the use of saccharin in the manufacture of beer.

Wholesale prices 20s. to 40s. per lb.

Sachets (Perfumed).—These are miniature ornamental bags or cushions, usually filled with cotton wool, with which a little powdered scent of some kind has been mixed, and they are used for placing in drawers, boxes, writing cases, etc., to perfume the contents. Sometimes the wool is merely perfumed with a few drops of liquid scent, and is of transient value.

Sack or Seck.—An old name for *dry* wines, as distinguished from *sweet* wines. Probably a corruption of the French word *sec*, or Spanish *seco*, meaning *dry*. The name Seck was first used in the sixteenth century for the Spanish wines, but at a subsequent period the term came to be used as a general name for other kinds, both dry and sweet.

Sacks, Bags, etc.—See *Bags*.

Safety Matches.—F. *Allumettes de sûreté;* Sw. *Säkerhets-Tändstickor.* (See also *Lucifers, Matches*, etc.) These were first invented about 1855, by a Swedish gentleman named Lundström, engaged in the world-renowned match factory of the Jönköping Company, at the town of Jönköping, in Sweden, which mill was first started in 1845.

We believe it was from the Jönköping mill that Bryant and May, of London, first obtained the right to manufacture them in England, a right which, of course, became everybody's after due expiration of the English patent.

Safety Matches may be defined as matches which will only strike on the boxes. The idea is a very simple but a very clever one. The inflammable ingredients are merely kept separate, one mixture being placed on the end of the match, while the other (*phosphorus*) is spread on the sides of the boxes and called *friction*. The inflammable material into which the splint is dipped ordinarily consists of the chlorate and bichromate of potassium, red lead, and antimony sulphide; or, say, 40 parts of minium, 30 parts of antimony trisulphide, and 6.7 parts of gum arabic.

Some makers use 6 parts of chlorate of potash, 2 or 3 parts sulphide of antimony, and 1 part of glue (weighed dry). The ingredients are thoroughly mixed and care taken not to mix the chlorate of potash in the dry state with the other

SAFETY MATCHES—(continued).

materials; it is mixed first with the gum or glue dissolved in warm water.

The friction or striking surface is generally prepared by mixing, say, 9 parts of amorphous phosphorus, 7 of iron pyrites, pulverised and sifted, 3 of pulverised glass, and one part of glue or gum, with the requisite quantity of water.

The paste is finally laid on the box or other surface with a brush or spatula. It is therefore only on a surface smeared with the latter mixture that the former will ignite. "Only" is, perhaps, too much to say, for Mr. B. Schultze, the inventor of smokeless powder, who recently made an examination and comparison of eighteen different kinds of so-called safety matches, says that the claim that they will ignite only on the box is unfounded. Many of them may be said to strike fire by rubbing them deftly over a sheet of writing paper, a smooth glassy surface, or certain other substances. There is, however, a sort of trick in this, and a clumsy hand may try fifty times without striking fire once. Stored in bulk also, some of these safety matches are liable to be ignited by the teeth of rats, mice, etc.

The mixtures forming the inflammable compounds vary with different makers, but the following is said to furnish matches exactly like the Jönköpings. Chlorate of potassium 400 parts, Minium 400, Antimony trisulphide 300, Chromate of potassium 150, and Gum Arabic 67 parts.

The striking surface is prepared from 9 parts amorphous phosphorus, 7 of iron pyrites, powdered and sifted, 3 of powdered glass and 1 of glue, made like thick paint with water.

The characteristics of the best safety matches are:—Security against accidental ignition, safety in striking them and without snapping spurts of liquid fire, freedom from strong smelling and injurious ingredients, perfection and efficiency of every match in the box, reliable number of actual matches, and no dummy or useless splints, and, lastly, real cheapness when compared with rubbishy imitations at any price.

It must be admitted that England is far behind certain other countries in match manufacture. The Swedish makers, indeed, seem to have brought the industry to the greatest perfection. The box should be well made and quite full, every splint perfect, and the wood of beautiful white poplar or aspen; then, on striking one of the matches, no miss-fire, no dangerous spurts of liquid flame flying into our eyes or on to any combustible surroundings, no burnt portions of the match breaking away and dropping red hot on the floor or carpet; all these matters have evidently been anticipated, and even when the match is finished with, and, perhaps, carelessly thrown away, the red fiery glow is extinct and harmless ere it can reach the ground. Then, as to *prices*, all can recollect a few years back, when the safety match business in England was controlled by one or two firms, that *penny boxes* were the cheapest to be had; whereas, now that the trade has become an open one, six, eight, and even ten boxes may be retailed for a penny.

Dutch made safeties are very unreliable and even dangerous; so are some of the Swedish importations. A curious action for personal injuries was heard a short time ago at the Bromley (Kent) County Court, a Miss Claxton, of Beckenham, suing a grocer named Booth, of the same place, for £50, damages for injuries sustained through the ignition of a box of "safety" matches, warranted "to strike only on the box." When the plaintiff was in the act of opening a box the matches suddenly ignited, inflicting such injuries that for six weeks Miss Claxton was incapacitated from carrying on her business. The matches, some of which were produced in court, were of Swedish make, of the "Windmill" brand, and were supplied to the defendant by Messrs. Bryant and May. For the defence, it was urged that the term "safety matches" was merely a trade designation, and implied no legal warranty.—His Honour held, however, that "safety matches" had come to be generally considered as matches striking only on the

box, and therefore as being safe in that respect. The way in which these matches had ignited was quite inconsistent with such a description. He gave judgment for £21 10s., with costs on the scale between £20 and £50.

Safflower.—The dried inflorescences of the Composite *Carthamus tinctorius*, cultivated in China, India, and Southern Europe, and largely used as a dye stuff and in the manufacture of *rouge*. It is classed as a bastard saffron, and the seeds yield an abundance of fixed oil.

Saffron or **Hay Saffron.**—Arab. *Zaifran;* Da. and Sw. *Saffran;* Du. *Saffraan;* F. *Safran;* G. *Saffran;* It. *Zafferano;* Pol. *Szafran;* Rus. *Schafran;* Port. and Sp. *Azafran.*

The dried and thread-like flower stigmas of the bulbous plant, *Crocus sativus*, a common species of crocus which closely resembles the ordinary spring crocus, and used to be cultivated in several parts of England much more than at present, particularly in Cornwall. It is unknown in a wild state, but was introduced into Europe from Asia Minor. In England it was unknown till 1339, when it was brought by a pilgrim from the East, but for about 300 years it was very popular. Its cultivation in Essex, which gave a name to the town of Saffron Walden, died out before 1768, but in Cambridgeshire it lingered into the 19th century. From very early ages saffron has had a great medicinal reputation. Homer mentions it, and Solomon associates it with spikenard, cinnamon, myrrh, etc. Most of it now comes from Spain, France, Italy, Asia Minor, Persia, Cashmere, and China.

The plant bears large purple or violet flowers and blooms in the autumn and not in the spring. The stigmas are usually gathered by women and children, and are spread out on a cloth to dry in the sun.

Each flower has but three stigmas, about 1¼ inches long, and it therefore requires about 2,000 flowers to produce a single ounce.

Austrian saffron is considered to be the best, and the French, grown at Pithiviers, in the Gâtinais, comes next, although it too quickly loses its vivid colour; but Spanish rules the European markets, and Valencia is the export centre, where it is stored by merchants, who usually advance money to the cultivators. Spanish saffron (*Croci stigma*) is divided into five grades, each cultivated in different districts, and is wrapped in white paper, and exported in tins either in an outer covering of matting or in wooden cases of about 160lbs.

Saffron is often adulterated with, or counterfeited by inferior varieties, also by the petals of safflowers, Bastard or false saffron, African saffron, American saffron, Dyers saffron, and wild or Meadow saffron, marigolds, etc.; but these may generally be detected by the naked eye, if examined. It is also liable to be loaded with glycerine, glucose, dyed vegetable filamenta, honey and emery powder, sulphate of soda, barium sulphate, etc.

The saffron from the Novelda district has often been found largely adulterated, and in England exhausted saffron is sometimes re-coloured with coal-tar dye. (See *Aniline Dyes.*)

If genuine, the stigma of the saffron crocus expands immediately on a pinch being placed on the surface of a glass of warm water, and exhibits a form so characteristic that it cannot be confounded with the flowerets of Safflower, marigold, or arnica, or with the stamens of crocus itself. Soaked in spirits or hot water saffron yields three-fourths of its weight of a deep orange yellow colouring matter, which is perfectly wholesome, and keeps best if closely corked. It has a bitter taste and an aromatic odour. A few threads put in the water for canaries occasionally make a good stimulant. The dried inflorescences are largely consumed in the manufacture of rouge.

Saffron is used chiefly for colouring paints, drugs, sweets, pastry, and other food substances; but its great solubility prevents its being used as a dye for fabrics.

It should be chosen fresh, not above a year old, with a powerful and sweetish aromatic odour, a warm, pungent, bit-

terish taste, and be of a fiery orange-red colour. That of whitish-yellow or blackish colour is old and inferior. *Hay saffron*, loose and uncaked, is the best.

Cake saffron seldom contains any of the real article, being prepared from the florets of the saffron made into a paste with gum-water. They should be close, compact, tough, moderately moist, and same colour without as within. *Meadow Saffron*, or *Autumnal Crocus*, a native of British limestone pastures, bears only a superficial resemblance to the true saffron crocus, but has long been used in gout and skin diseases.

Saffron is very popular with the Jews as a colouring for soups, jellies, etc., and is used to dye window curtains; also administered to canaries during moulting.

Saffron Flour.—The health-giving virtues of saffron have long been known, and in Cornwall, as well as in certain districts of Ireland, *Saffron bread*, made of ordinary flour and crude saffron liquor, is quite common.

Sage.—F. *Sauge.*

A small, shrubby, garden perennial (*Salvia officinalis*), seldom growing more than two feet high, with wrinkled leaves of red or green colour, and of a very strong, sweet, aromatic odour and taste, something like camphor.

Both green and dry, they are a very popular flavouring for sausages, soups, stuffing, etc. The chopped leaves or the expressed juice of sage have been used for over a thousand years in making *sage cheese*, *Swiss tea*, etc. In ancient times the medicinal virtues of the plant were much more highly esteemed than now.

The herb has numerous varieties, it grows best in a dry soil, in a shady situation, and is easily propagated by slips dibbled in the ground in spring or autumn. An oil is also obtained from it. (See *Dried Herbs.*)

Wild sage is a name in Cape Colony for the *Tarchonanthus camphoratus*, the leaves of which are chewed, smoked, and employed in the form of infusion.

Sage Cheese or **Green Cheese.**—A speckled variety of cheese made by mixing and colouring a portion of the curd with bruised or chopped sage leaves, or a decoction of sage, and to which marigold flowers and parsley are often added.

In Scotland the seeds of lovage are commonly added to cheese; the curd thus mixed is then amalgamated with other uncoloured curd, and pressed in ordinary way. This sage or green cheese is a very old favourite, and was very popular with the Romans throughout the Middle Ages.

Sage Tea.—An infusion of *Salvia officinalis*, one of the small-leaved varieties of sage. It is a very useful and mild tonic, with valuable astringent and aromatic properties, and is especially good for sore throats. It is highly esteemed as a beverage in certain parts of Northern Europe, and in China it is often preferred to the staple product. Sage tea used to be drunk considerably in England before the introduction of Chinese tea.

Sago or **Palm Starch.**—Da., Du., G., Sw. *Sago;* F., Jav. and Mal. *Sagou;* Hin. *Sagoo;* It., Port., Sp. *Sagu;* R. *Sagho.*

This is obtained in India, China, Borneo, Sumatra, Singapore, etc., from the mealy trunk-pith of various kinds of low palm trees, such as *Sagus Rumphii* and *S. læve*, which are cultivated in the Island of Ceram, and at Sarawak, in Borneo. Immense quantities are prepared by the Malays in the Molucca and Philippine Islands, also in New Guinea. In India it is obtained from *Phœnix farinifera.*

The ordinary sago palm grows twenty to thirty feet high, but only flowers once, and that when about fifteen years old, after which it soon dies. When fully matured, and just ready to flower, the tree is felled, the hollow trunk, eighteen to twenty-two inches in diameter, is split or sawn into pieces, and all the soft white and spongy pith found inside is scraped out. This pith is then bruised in a mortar to a coarse powder like sawdust, washed in cold water, and strained in a cloth until all the white fecula or starchy matter separates and settles to the bottom of the tank, leaving the water almost

SAGO—(continued).

clear, but with the woody fibre floating on the top. This water and the fibry refuse are then removed, and the starchy sediment may either be caked right off for native use as bread, or dried and pounded up into "*Sago Flour*," or meal.

This meal is very cheap, the yield being 300 to 1,200 lbs. a tree, and some of the widely-advertised laundry starches are made up wholly from it. As it yields a transparent paste, it has quite superseded potato starch as a glaze.

SAGO.

The *Sago Bread* used by the inhabitants of the Moluccas is made by simply throwing caked lumps of sago meal into heated earthenware moulds, where it soon bakes in a hard mass, and 1lb. of this suffices as the daily diet of a native when engaged in hard bodily work.

But a large quantity of the starchy sediment above referred to, after being dried, assumes a granulated form by the addition of water and pressing it through a colander, and it is thus converted partly into small pearly grains, called *Pearl Sago*, and partly into larger and browner grains, known as *Brown Sago*. These brown grains are often bleached to improve their appearance. The sago industry is carried on mostly in India, and at Singapore, where some forty million pounds are made yearly by Chinese manufacturers. Purified or washed sago starch is made chiefly in Malacca.

The annual import of sago into England is about 35 million pounds, and London is the chief market.

Inferior kinds of sago are derived from the Gomuti palm (*Arenga saccharifera*) of the Malay Archipelago, *Bastard Sago*, or *Kitool*, from the Kitool palm of Ceylon (*Caryota urens*), the Cabbage palm (*Corypha umbraculifera*) from *C. Gebanga*, *Raphia flabelliformis*, and *Metroxylon filare.all* in the East Indies; and from *Mauritia flexuosa* and *Guilielma speciosa*, in South America.

Japan Sago is a kind obtained from four different species of *Cycas*.

Portland Sago, sometimes called "Portland arrowroot," is a kind which used to be made in the Isle of Portland, England, from the tubers of the wake-robin, or *Arum maculatum*, but this manufacture died out a few years ago.

German Sago.—A good deal of so-called sago used to be made in Germany, from potato flour, and coloured yellowish with oxide of iron, or burnt sugar, but not so much now since potato flour has gone up in price.

Wild Sago.—A kind produced in Florida and Jamaica from the stems of the *Zamia pumila*.

Sago is considered inferior to rice in nutritive qualities, and consists almost exclusively of starch, but is very easily digested, and hence of great value to invalids and children. It possesses very little flavour of itself, but is generally used with other suitable adjuncts. It reaches England chiefly *viâ* Singapore.

The best quality has a slightly reddish hue, and readily dissolves into a jelly with hot water. Sago is often meanly coloured red by certain confectioners and acidified, to represent fruit jam in cheap tarts for the poorest children in the most crowded neighbourhoods of our larger towns and cities.

Granulated sago often comes into commerce as *Tapioca Sago*, which is of reddish colour, and contains soluble

starch; also as granulated sago, which does not yield a paste. On the other hand, many grocers have been fined for serving granulated or seed tapioca when small "white" sago has been asked for. It should be easy to remember that sago is always *brown*, and that the small white seed-like pearls are really tapioca.

Apply to Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool.

St. Bartholomew's Tea. — See *Paraguay Tea*, p. 682.

St. Elie Wine. — A dry, pale, Grecian product, but inferior to Calliste.

St. Estephe (St. Stephen).—A red Bordeaux wine, of only secondary quality, but very largely imported into this country.

St. Germain Tea.—A medicinal mixture, composed of 16 parts alcoholic extract of senna, 10 parts of sambucus flowers, 5 of anise, 5 fennel, and 3 parts of potassium bitartrate.

St. Helena Tea.—A shrubby plant of St. Helena, botanically known as *Frankenia portulaceæfolia*.

St. John's Bread. — See *Locust Beans*.

St. Julian.—A common red Bordeaux wine, similar to St. Estephe, very largely imported, but only of secondary quality.

St. Michael Oranges.—These delicious little thin-skinned oranges are a sub-variety of the China species, pale yellow in colour, and grown in the Azores, around St. Michael. The pulp is very sweet, and usually seedless, and they arrive in Hull early in December.

It may be remembered that the fruits of the young tree are often fully seeded, and that it is only when the tree is getting old and feeble that the seed ceases to be matured, and the fruit accordingly to be valued for that very reason.

The trees are remarkably productive, and St. Michael oranges were once the most popular kind imported into this country; but the import has fallen away very much lately, although considerable quantities still come *viâ* Hull.

It is said the growers put too much chemical manure, guano, etc., into the soil, and that the product does not, therefore, stand the sea voyage so well as formerly.

St. Romers. — An old name for Lucifer matches. (See p. 555.)

Saka, Saki, or **Sake.**—A kind of beer, made from rice, in Japan, where it is a very popular drink with the natives. It is usually drunk hot, and consumed at the yearly rate of about 150 million gallons, or about 4½ gallons per head, many varieties of it being sold under fancy names. It is flavoured with honey and sugar, and is very heavy and heating, but not of unpleasant flavour, although very undesirable from a hygienic standpoint. Since the China-Japan War beer of the English type has come much into favour in Japan. There are now three large breweries in Tokio, and ten in other parts of the island, the duty on *saké* having been raised to discourage its use; and the new beer is not only taking its place, but is also being largely exported to Russia, Siberia, Hawaii, Philippines, and China. *Homeishu*, or *life-keeping saké*, is a spirituous liqueur flavoured with herbs, and not at all unpleasant.

Salad Creams or **Salad Dressings.**—These are dressings made from numerous recipes, and often vary considerably in flavour. Salt, mustard, pepper, vinegar, sugar, and olive oil are the chief ingredients, to which are often added eggs, cream, gum, wine, etc.

Example:—Mix 1 teaspoonful of made mustard with 1 of pounded sugar; add, drop by drop, 2 tablespoonfuls of salad oil, then 4 of milk, and 2 of vinegar, with salt and cayenne to taste. The whole must be stirred carefully all the time, the ingredients being added very slowly. Where oil is not desired, 4 tablespoonfuls of cream may be substituted.

Oil, especially when combined with vinegar, enables many delicate persons to enjoy and digest raw vegetables who could not tolerate them without it.

An excellent dressing is made as follows:—Half a pint of strong vinegar, 2

ozs. olive oil, yolks of three eggs, 3 grains ground cayenne, 3 grains brown sugar, 1½ ozs. ground mustard, 1 oz. salt, and 3 ozs. clotted cream.

The dressings should never be mixed with the salad till the last moment, because of the vinegar quickly destroying the crispness of the raw vegetables, and thus destroying the appearance as well as the flavour of the dish.

Salad culture in France is an important and very interesting industry. By improvising large quantities of the "cloches," or bell glasses, which are manufactured so cheaply about Paris, Frenchmen are very clever in producing throughout the whole of winter and spring fresh, crisp lettuces, etc. Large quantities of these are imported into England, and an increasing business is being done in them every year.

For finest salad dressings, apply to Charles Cocks & Co., Reading.

Salad Oil.—A convenient name for impure or adulterated olive oil. (See *Olive Oil*.)

Salad Plants.—These comprise lettuce, cress, watercress, mustard, dandelion, endive, chicory (succory), sorrel, nasturtion. Being considered rich in salts, especially potash, they are becoming more and more popular, and for spring use large quantities are imported every season from France. *Barbe de Capucin* (monk's beard) is produced in the neighbourhood of Paris by planting chicory roots in dark cellars in rich sandy soil. If kept dark and properly attended to, the long, tender leaf sprouts, of bright golden colour, soon shoot forth and command good prices.

Salami, or Salamy—A large species of sausage, very popular in Italy and Hungary. There are several varieties, but they usually consist of pork, beef, and bacon, highly seasoned, and coloured with red wine, also dosed with borax or other preservative. They are tightly filled in strong casings, and finally well cured in pickle and dried so as to keep for years.

Salep, Salop, or Saloop.—A commercial fecula that used to be very popular, but is very rarely heard of nowadays. It is extracted from the tubers or bulbs of various species of orchids (*Orchis moria*, etc.). Being very mucilaginous, it is used principally as a diet drink, or thickener or base for soups and broths. The best is made in Turkey and Persia, and is generally prepared from the male orchid. The Bengalese prepare a similar food from a species of chestnut and call it *Salep-misree*. It forms a highly nutritious diet for invalids, and is sometimes mixed in chocolates.

Saleratus.—An old name for bicarbonate of potash salt between *Carbonate* and *Bi-carbonate of Soda*. *Baking Soda* is another name for the same thing. Saleratus is used by bakers and housekeepers with cream of tartar, for mixing with flour, sour milk, etc., to evolve the carbonic acid gas on the addition of water, the dough expanding in the oven and rendering the product light and spongy.

Sal-Gem.—A commercial name for native rocksalt.

Salicine.—The alkaloid, or crystalline bitter principle of the bark of the willow.

Salicylic Acid.—F. *Acide Salicylique*; G. *Salicylsäure*; It. *Acido salicilici*; Lat. *Acidum salicylicum*; Sp. *Acido salicilico*. (See also *Antiseptics* and *Preservatives*.)

A white, powdery organic acid or antiseptic. It is drier and lighter than flour, and is made from carbolic acid. It has a sweet and slightly astringent taste, and is odourless, but gives off a sharp acidity, which powerfully affects the nose and eyes.

It is derived from several sources, and may be obtained from the glucoside salicin found in the bark and leaves of the willow, or from the oil of wintergreen. The most has probably been obtained synthetically by *Kolbe's* patent method, which consists in acting on sodium carbolate with carbonic anhydride. *Hauff's* process also is a very productive one. An inferior kind is produced from crude carbolic acid,

Kolbe's patent having now expired, the manufacture of synthetical salicylic acid has been undertaken by different makers, but several of these new kinds are said to contain salol, due to defective distillation.

Creosotic acid is a frequent adulterant of salicylic acid, although even 2½ per cent. of it is considered dangerous to health.

Salicylic acid is an effective antiseptic and anti-rheumatic and is largely employed in preserving foods and drinks.

Quinine Wine and *Orange Wine* often contain about 18 grains to the quart. It is recommended for keeping sweet either fresh meat or preserved foods, tinned or otherwise, preventing fermentation in insufficiently boiled jams, fruit pulp, and in pickles made with weak vinegar. It is also sometimes used in the manufacture of British wines, aërated beverages, and cider, and particularly in fortifying low qualities of *Lager Beer*.

Its use in beverages is to arrest fermentation and so prevent the drinks from becoming too alcoholic; 4 to 8 grains per gallon is quite sufficient, but 60 to 90 grains have been found, and these are liable to injure the digestive organs of children and delicate people. Medicinally it is applicable to a host of purposes, dressing wounds, etc.

In acute cases of fever 5 to 30 grains are given every 4 or 6 hours.

In France, Germany, and some other countries the use of this acid in food and drinks is prohibited.

It is apparently very doubtful as to whether its use in human food is not harmful, for although it may be chemically pure and tasteless, it certainly leaves a perceptible and very disagreeable after-taste. It is technically represented by $H_2C_7H_4O_3$, but competent medical opinions regarding its effects are somewhat at variance, and legal decisions vary greatly as to whether, or how far, this acid should be employed as a preservative of foods and drinks.

Apply to C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Sally Lunns (named after Sally Lunn, a pastrycook in Bath, who cried them about the streets about a century ago). They are a kind of sweet, spongy teacake. The ingredients consist of flour, butter, milk (or cream), and eggs, mixed and fermented with yeast. After the dough has risen it is divided into small thick cakes, rather larger than muffins, and baked in a quick oven.

Original Recipe: Take 4lbs. bakers' dough, 6 ozs. butter, 6 ozs. sugar, two eggs, a few drops of lemon essence, and a little spice. Mix in paste, and afterwards in bulk. Divide out into sizes for hoops, and prove; bake in a hot oven. They are usually toasted and eaten hot, well buttered, and cut into three slices. Dalmee, a well-known baker, once bought the original recipe for these buns and made up a song about them.

Salmagundi, or **Olla Podrida.**—A Spanish medley of minced meat, and pickled herring, with oil, vinegar, peppers and onions. A sort of *Salpicon* or *Olio*. (See also *Hotch Potch*, p. 474.) It is highly popular in the West Indies, and usually very hot.

Salmon, Dried, or **Smoked.**—F *Saumon;* G. *Salm;* It. *Salmone;* Da. and Sw. *Lax;* Port. *Salmao;* Sp. *Salmin;* Russ. *Semgha.*

The kippering or drying of salmon is very simple. The fish is split and cleaned and then a mixture of saltpetre and sugar is rubbed well into the flesh. It is then left in brine for six or seven weeks, after which it is carefully pressed and packed in casks, with alternate layers of salt, or else stretched out and hung up, to be either dried or smoked. When well done, the fine flavour and richness of the fish is very little diminished—especially if not hung too long.

Commercially, salmon is far superior to any other river fish. It is called a river fish because that is its birthplace, and it is caught in rivers, although it spends its winters in the sea, where it recruits its strength periodically, or it would soon die.

During the breeding season the male

is called a red fish, and the female a black fish, because of their colour.

After spawning, the parent salmon descend to the sea, are weak, poor, and very much out of condition, and are then called "Kelts," or the male is termed a *Kipper* and the female a *baggit*. These are unfit for food, and numbers die from exhaustion before they reach the sea. In the sea they soon recover, and when they ascend the river again they are in good condition. They should only be taken when coming up the rivers from the sea, and never going down seaward. Salmon used to be so cheap and plentiful in the North of England that workmen engaging as servants would generally bargain that they should not have salmon to eat more than three days a week.

Like most other fish, salmon is most delicious when cooked and eaten while fresh, and while the fatty curd (which begins to disappear within twelve hours) remains between the flakes of its flesh. It is not, however, so digestible then as if kept a day or two before cooking. Smoked salmon is, however, much more popular in several parts of the Continent than in England.

Salmon, Frozen. —The importation of frozen salmon from the Fraser River, British Columbia, is a new development. The fish when caught is frozen immediately in its own moisture, which, of course, arrests decomposition and admits of preserving for an indefinite period. When thawed, the fish has a beautiful appearance, and should be as fresh as when caught, and as perfectly edible.

Salmon, Pickled. — This is prepared in much the same way as other pickled fish, and calls for no special description.

The inspector of Irish Fisheries issued a warning to English buyers of salmon. The salmon are sometimes poisoned by a water plant known as spurge. The Irish will not touch them, but unprincipled dealers send them to the English markets, where they sell rather cheaper than the British fish. People who partake of this poisoned fish are ill, and exhibit every symptom of irritant poisoning. Fresh salmon should have a bloom on the skin, the gills should be bright, the flesh firm and bright, neither pale nor of the maroon colour assumed by bad salmon. This *Euphorbia Hibernica*, or Irish spurge, kills trout, and other freshwater fish, as well as salmon.

Large *Dutch salmon* are imported in the winter months, say from the end of November to the end of January.

The fish is also imported in bulk in frigorific receptacles. (See *Frozen Salmon.*)

Salmon is found near the mouths of most northern rivers, and as far south as the Loire, in France, and the Hudson in America, but never in hot climates.

About seven weeks after being hatched at the spawning station, in the bed of the river, the young salmon is about an inch long, and is called a *samlet*, or *parr*, and after spending a year or two in the river, the young fish, now called *smolts*, or *salmon-fry*, congregate into shoals and proceed leisurely seaward in May and June. On reaching the open sea the fish may weigh only a couple of ounces, but such is the effect of the change to salt water that after a few months sojourn it returns to the river as a *grilse*, weighing from 2 to 10lbs. A grilse under 2lbs. is called a *salmon peal*. In two or three years more the grilse becomes a salmon, and always returns in preference to its own native river in spring. Trout destroy young salmon in great numbers.

Salmon vary in weight up to 80 or 90lbs. each.

Salmon, Tinned or **Canned.**— Da. and Sw. *Lax;* Du. *Zalm;* G. *Buchsensalm;* It. *Salmone;* Jap. *Masu;* Nor. *Lax;* Port. *Salmo em conservo;* Sp. *Salmon en lata;* R. *Semgha;* W. *Eog.*

The canned or tinned salmon business has only grown up since 1866, but is now the most familiar form in which that highly-esteemed fish is known to the present generation. From thirty to forty million pounds of tinned salmon are now imported into the United Kingdom yearly.

SALMON —(continued).

It nearly all comes direct from the Pacific Coast, where the fish have occasionally been so abundant as to nearly choke the rivers. The British Columbian Coast of the Pacific, extending from the 49th parallel to Alaska, is, of course, very extensive, and deeply indented. Vancouver Island and Queen Charlotte Islands, standing out seaward, are separated from the mainlaind by numerous channels grouped in minor archipelagos. Stretching inland are many long inlets, the whole configuration being irregular, but exceedingly picturesque and rich in food fishes. The run of salmon first begins in the northern waters, the fish entering the various inlets and rivers a little later in the season, and extending as far south as Sacramento. The accompanying table will best show the chief centres, the rise, progress, and extent of the business, also the yearly importations into the United Kingdom.

SALMON TINNED FROM COMMENCEMENT TO END OF 1900.

(The figures show the number of cases, each containing 4 doz. 1lb. tins, or equivalent.)

Year.	(A) Puget Sound.	Washington Coast.	British Columbia.	Columbia River.	Oregon Coast.	Sacramento River.	Alaska.	Total Pack.	Imported into U.K.
1900	361,000	45,000	407,923	292,000	45,000	38,000	1,654,209	2,843 132	850.244
1899	892,324	33,600	732,437	340,125	74,930	33,550	1,094 207	3,201,175	969.219
1898	423,000	22,000	484,161	481,461	85,309	27,150	1,028.317	2,551,398	1.265.289
1897	433,500	42,000	1,015,477	552,721	68,683	41 000	909 078	3 062,459	1,057,625
1896	321,400	—	601,570	463,777	—	13,387	966,707	2.366,841	952,597
1895	205,500	—	566,395	617,460	—	25,185	626,530	2,041.070	647,190
1894	103,340	—	494,371	491,100	—	28,463	686,440	1,803,714	554.000
1893	105,309	—	637,120	396,680	—	23,336	643,654	1,806.099	547,000
1892	129,000	—	236,997	487,338	—	2,281	474,717	1,330,333	669.365
1891	98,305	—	314,813	398,953	—	10,353	801,400	1,603,824	708.035
1890	67,117	—	409,464	435,774	—	25,065	682 591	1 620,011	621 034
1889	199,068	—	414 400	309,885	—	66,666	714.196	1 704,215	368,035
1888	154,000	—	135,600	372,477	—	61,200	412 115	1 135,392	316,346
1887	195,400	—	201,990	356,000	—	36,500	206.677	996.567	364,077
1886	131,100	—	163,004	448,500	—	39,300	141.565	923.469	357;863
1885	51,750	—	106,865	553,800	—	48,509	77.515	838,439	471,364
1884	41,350	—	138,945	620,000	—	81,450	60.886	942,631	561,326
1883	38 000	—	243,000	629,400	—	160,000	46 337	1,116,737	—
1882	49.000	—	255,061	541,300	—	200,300	21.745	1,058,406	—
1881	48,500	—	175,675	550,000	—	181,200	8,777	964,352	—
1880	37,200	—	61,300	530 000	—	51,000	6,539	686,039	—
1879	30,000	—	57,394	480,000	—	31,000	12.530	610.924	—
1878	30,000	—	113,601	460.000	—	36,500	8,159	648,260	—
1877	24,800	—	67 387	380,000	—	21,500	—	493.187	—
1876	25,600	—	9,847	450,000	—	8 000	—	493.747	—
1875	—	—	—	375,000	—	3,000	—	378.000	—
1874	—	—	—	350,000	—	25,00	—	352.500	—
1873	—	—	—	250,000	—	—	—	250,000	—
1872	—	—	—	250,000	—	—	—	250.000	—
1871	—	—	—	200,000	—	—	—	200,000	—
1870	—	—	—	150,000	—	—	—	150,000	—
1869	—	—	—	100,000	—	—	—	100,000	—
1868	—	—	—	28,000	—	—	—	28.000	—
1867	—	—	—	18,000	—	—	—	18.000	—
1866	—	—	—	4.000	—	—	—	4,000	—

(A) Years 1876-1896 inclusive include outside rivers; since, Puget Sound only.

In addition to the above, some 20,000,000 lbs. of fresh salmon are distributed in cold storage, also barreled salted salmon to the extent of about 30,000 barrels annually.

SALMON—(continued).

In the accompanying Table the reader must remember that—

"*Puget Sound*" comprises the canneries of Blaine and Semiahmoo, Fairhaven, Chuckanut, Port Townshend, Anacortes, Lummi Is, Seattle, and Tacoma.

"*Washington Coast*" comprises Gray's and Willapa Harbours.

"*British Columbia*" includes Fraser River, Skeena River, Rivers Inlet, Naas River, Lowe Inlet, Alert Bay, West Coast, V.I., and Namu Harbour.

"*Columbia River*" includes both the Washington and Oregon sides of the river.

"*Alaskan*" includes Prince William Sound and Copper River, Cook's Inlet, Kadiak and Chignik Bay, also Bering Sea, Chilkoot, Wrangel Narrows, etc.

The quality or value of salmon depends chiefly on the species of the fish, the season—spring or autumn—when caught, and on the particular location or waters whence taken. Walbaum gave them their scientific names about 100 years ago, and modern ichthyologists, in accepting them, are agreed in the opinion that there are numerous varieties, and, at least, five species of *Onchorynchus* (ong-ko-ring-kus), or Pacific Coast salmon, viz.:—(1) The *O. schawytscha*, comprising the Chinook, Tyee, or Quinnat salmon. (2) *O. nerka*, the Blueback, or Red-fish. (3) *O. kisutch*, the Silver salmon, Cohoes, or Silversides. (4) *O. keta*, the Dog salmon, or Chums. (5) *O. gorbuscha*, the Humpback, Haddow, or Sockeye salmon. These and other kinds of the salmon family are found in different regions or at different seasons, although they have never been known to return to any but the parent river—that is, the stream whence they issue as fry.

The "Chinooks" got their name from the village of Chinook, on Chinook Creek, a tributary of the Columbia River emptying into Baker's Bay, and the other names will be sufficiently identified as they occur.

It will be noticed in the descriptions following of the salmon of the different districts that there is a great similarity in the fish, one or two varieties being distributed over the whole coast. There is always, however, it should be noticed, a difference in grain, colour, oil, or flavour, according to the locality caught. Perhaps Puget Sound is at present the most favoured salmon region as a whole of any on the coast, all the fish packed there being caught in salt water practically before the fish has had any chance to deteriorate. On August 11, 1899, from Monday, 10 p.m., to Tuesday, 4 p.m., the Pacific American Fisheries Company of Puget Sound, the largest cannery in the world, took in 136,000 salmon, 80,000 being sockeyes, from two traps in the gulf.

The blueback salmon is next to the chinook in importance, and is probably more numerous on the Coast than any other. It is the blueback of the Columbia, the sockeye of Puget Sound and Fraser River, and the red fish of Alaska.

The humpback is found in great abundance in Puget Sound and Alaska. The flesh is of fine flavour, but lacks colour. It greatly resembles a small chinook when first entering fresh water, but as it nears spawning time a marked hump develops on its back.

COLUMBIA RIVER SALMON.—On the Columbia, where there are three runs in the year, four of the five species are found, the humpback being the only salmon not caught there. The first run is to Clackamas River in March and April, the Royal chinook in May, June, and July, and the fall common chinook about July 25 to September inclusive. The spring run of chinook is by far the most valuable and largest of the salmon family of the Columbia. It is rich in oil and flavour, a rich red, raw or cooked, and brings the highest figure of any Coast salmon. This fish does not enter other rivers than the Sacramento and Rogue, according to general belief. When it first enters the Columbia, in the spring, it is a beautiful silvery colour, and the sides of the head almost metallic in lustre. As spawning approaches they deteriorate fast, turn pale, or dirty red in colour, and the male's jaw becomes

SALMON—(continued).

hooked and repulsive in appearance. Whether at the spawning grounds or at the mouth of the river, if late in the season, deterioration is marked. They do not return to salt water after ascending 150 miles. Possibly 10 per cent. of those entering that are not caught return to the ocean. The chinook spawning period on the Columbia extends from July 15 to November 15. The fry is 10 months in fresh water before going to the ocean. The average weight is 25lbs., but 85lb. and 100lb. fish are sometimes caught, and 60 and 65 lb. sizes are common.

The Blueback is a numerous salmon on the Columbia. It is next to the humpback, the smallest of the five species, the largest rarely exceeding 10lbs. in the Columbia, and the average 4½lbs. It follows the chinook closely in the spring. The chinook enter in small numbers in January, and the blueback in March. The blueback goes up those streams only rising in cold snow-fed lakes, and its favourite spawning ground in the Columbia basin is Wallowa Lake, in North-Eastern Oregon. Spawning period, August 1 to October 1. It is a bright blue on top until the breeding season, shading gradually to the middle, where it becomes a bright silver. Its flesh is a bright red, which is retained in cooking, and makes it, next to the chinook, the most valuable for canning purposes. The hooked jaw is characteristic of the male in spawning season. The large runs come every four years, and a lesser run every two years. In 1894 there was a tremendous run of this fish in the Columbia, and since a marked decline appears to have set in, the yield seeming lighter each of the last three years, and many think it near extinction there.

Silver salmon, Silversides, or the Cohoe, is one of the best-looking salmon in the family, being extremely well shaped, and of a beautiful silver hue. It does not retain its colour in cooking. It averages about 8lbs. on the Columbia, and enters in September, and continues to run until November.

The Dog or Chum salmon averages 12lbs. It is the least valuable of the five species. In the spring it is a dirty silver colour, sprinkled with small, black specks; the fins dusky. In the fall it is blackish, with distorted jaws. It has a fine red colour just after entering fresh water, but deteriorates rapidly, and becomes almost white. It has a firm texture, but is not oily.

The Steelhead, known as Gairdner's trout, Hardhead winter salmon, etc., is really a trout, but gets protection as a salmon. It spawns from February to May. Its flesh is light coloured. Average 10lbs., individuals sometimes reaching 30lbs. It runs in the Columbia the entire year, but is getting very scarce there. It returns to ocean after spawning, and is a prime cold storage fish.

PUGET SOUND SALMON.—The principal and finest grade of salmon packed is the Sockeye, or Fraser River salmon, of the chinook species. It is of a deep red colour, closely flaked, and has a heavy red oil. It shows up firm in the can, and is most excellent eating. It is packed from small fish, average 7lbs. Being caught in salt water adds to the firmness of the salmon, so that, when packed, it is much firmer in the can than the salmon caught in the fresh waters of the Fraser River and other fresh water localities. It is a peculiar fact this salmon does not show up its true quality until from one to five months after being canned. In July the first of the great shoal come round Cape Flattery, on Vancouver Island, and news is sent post haste to the fishers on the Fraser that the Indians at Becher Bay are busy with the salmon. The Indians at Becher Bay are the outposts of the hostile army. Like other outposts, they are few in number, and the fish they take are scarcely missed from the shoal. From Becher Bay onwards the troubles of the sockeye increase. His course is well known, and his enemies lie in wait on every mile of it. Round every kelp-bed there are spoons spinning for his big cousins, but he will not look at them, and passes by untempted. However, a fine fringe of nets are arranged, narrowing the way; the impulse is to go forward, and, like sheep, they follow their

SALMON—(continued).

leaders till jostling each other in a netted pound 50 feet by 30, where they have to stay, hopelessly confused, and dashing wildly from side to side until a steamer comes along with a scow in tow. On the scow is a crane.

Chains are then hitched on to the immense net which is below the pound, and some thousands of strong free fish, who had an hour ago the whole sea to swim in, are drawn up to the surface and ladled out in scoop-nets, knocked on the head, thrown on the scow, and carried off to the American canneries at Point Roberts, where they are soon converted into "tinned salmon."

The small town of Steveston, at the mouth of the Fraser, "hums" with sockeyes in the season. These fish are very remarkable, for, from the time of their birth in the golden gravels of the Upper Fraser to the time they are caught, no one knows exactly what becomes of them. They are, however, supposed to go down the Gulf of Georgia and out into the North Pacific, but there is no other trace of them till they are four years of age. Almost everything else connected with them is a mystery. Once every four years they return in enormous numbers, the second year the numbers are less, and still less the third, until the bumper year comes round again, and the Fraser is fairly wriggling with fish. What is more, the sockeye sort are all of an even size. There may be millions of them, but the average size is 7lbs. Those that get back to the sea again always return weighing 7lbs. This is not the case with their cousins, the big spring salmon, who vary from 12 to 50 lbs.

The sockeye, also, is not to be fooled, caught up in the spinning spoons of the "fish wheels," but immense numbers are trapped in Puget Sound. The sockeye salmon season commences about July 15, and ends August 15, cases being available for shipment about September 1.

The next salmon in importance is the Cohoe. This is caught in salt water. It is a deep pink salmon, although by many it is classed among the redfish. It is of exceptionally delicate flavour, rich in oil, and is especially good eating. The season on Puget Sound commences about August 1, and goods are ready for shipment about September 1.

Humpback salmon makes a heavy run only every other year. It is, like all fish of Puget Sound, caught in salt water. These salmon are also called *haddow*. It has a good flavour, is of fine texture and nice sweetness; has some oil, but is light in colour. When fresh, this fish is red in colour, but turns pale in cooking. A proper description of the meat in the can would be pale pink. The run is in the fall, continuing from August until October. Some goods ready for shipment about the middle of September.

The Chum salmon is the cheapest grade packed on Puget Sound. It is almost white in colour, but it has a firm texture. It has no oil to speak of. It is packed in September and October. Shipments from October 15 to December 15.

The Spring salmon is another variety packed in very small numbers. It is properly a chinook, something like the tyee, or king of Alaska, and the royal chinook of the Columbia. It is the earliest fish to run, and the latest. The few that are caught are generally packed with sockeyes. On Puget Sound they are often priced at the same as sockeyes.

ALASKA SALMON. — The principal pack of Alaska is called Redfish in that region, and is known in other localities as blueback and sockeye. Four other kinds are also packed, the principal of these being the humpback, the next in importance the cohoe or silver. Then there is the king, the most valuable of the salmon, but in few numbers, and known in other localities as quinnat, chinook, Columbia, Sacramento, tyee and sometimes sockeye. Finally there is the dog salmon. In local talk there are other different names for the salmon in Alaska. For instance, at Hunters Bay the king is called spring salmon. At Wrangel redfish is called silver salmon and the cohoe is called tyee. In Prince William Sound the small redfish are called bluebacks and the large ones redfish. At Klawack and Sukkwan the

SALMON—(continued).

cohoe is called tyee, and at Killisnoo the same salmon is called *klucks*. The commercial names of Alaska fish are, excepting king, still different. The redfish and bluebacks are called red. The cohoe is called medium red. The humpback is called pink. Dog salmon are chums, but these, although commonly eaten by the Indians, are not generally supposed to be packed.

The pack of Alaska, considered in the order of the market values per case of the canned fish, is made up of king, redfish, cohoes and humpbacks, as indicated, and in the order of abundance for commercial use, redfish, humpbacks, cohoes and king. As many as 75,000 have been taken in a single haul of a net. In south-east Alaska it is doubtless true that there are more humpbacks in the streams than redfish. In the opinion of some the cohoe should rank next to king in food value. Its meat is more delicately flavoured and contains more oil than the redfish, but it lacks the full, deep red colour of the latter, which is popularly supposed to indicate the best quality of salmon. The redfish is in reality coarse and dry. It may be more or less popular with "people who eat with their eyes," but chinook and sockeye are much preferred by those who study texture and flavour. The dog salmon packed in 1897 were 1,000 cases by one cannery. In one cannery humpback and chums have been packed together under humpback labels, and at nearly all canneries, it is said, a straggling chum, if in good condition, may be included. But as a rule chums in Alaska may be considered a waste species.

There is a great variation in the time of running of fish in the different streams. The Alaska season may roughly be said to begin about July 1st. As already shown, it appears as though the onshore movement came from the westward, the large rivers of a region receiving the first impulse. This is natural, as the large rivers' influences extend further into the ocean. Probably the king as a rule come first, and stragglers are caught throughout the season in all districts of Alaska. As soon as the ice clears sufficiently to allow fishing the king salmon are taken, the earliest at Copper River about May 6th, at the mouth of the Stickene River about May 15th, while Cook Inlet and Taku River the earliest fishing date is about May 25th. In these localities some redfish are taken with the earliest fishing, and as soon as they are seen to be in large numbers the gear is changed, except in Cook Inlet, where king are fished until late in July. The change is made from king fishing to red because the latter are most profitable, the former still running. In localities other than those in the vicinity of the larger rivers, that is, on purely redfish ground, the fish runs first in the Karluk district, when packing usually begins during early June; Chignik follows about the middle of June, and Prince William Sound and south-east Alaska the latter part of June. The streams nearer the sea receive the first fish, though there are some exceptions. The run at Karta bay, for instance, which is well inside, is very early. Few canneries in south-east Alaska begin to operate before July 1st to 7th, Pyramid harbour and Wrangel, where a few king salmon are packed, commencing in May, being exceptions.

Except at Karluk the runs frequently extend to October 1st, and in the large rivers cannerymen usually count on about six weeks for the duration of the redfish run. Then if there is a variation at the commencement of the run there is a still greater variation of time at the end, and in many localities much depends on the stage of water in the river. The bulk of the redfish pack is made in July and the early part of August, though most of the canneries pack until the latter part of August, and some into September, but except at Karluk there are only a few fish that are taken in connection with the humpbacks and cohoes.

Cohoes are not plentiful anywhere in Alaska. The run for commercial purposes commences the first week in August and continues until after the canneries close the latter part of Sep-

SALMON—(continued).

tember. There is some variation in the run, as noted for redfish. The Wrangel cannery, which packs cohoes from Lake bay, usually begins about July 5th.

Humpbacks in south-eastern Alaska, where the principal pack of this fish is made from July 15th to August 15th, though sometimes a week earlier, and they are packed by some canneries until September 1st. In Prince William Sound they are almost a week earlier.

Chum salmon are not very numerous, and as already stated no great pack is made of them. At Chignik in 1897 the run was at its height August 1st.

Steelheads also are not abundant. At Ketchikan they run from middle of May to last of June.

Alaska cannerymen and fishermen all agree that hardly any two streams in the district carry exactly the same redfish or other species; that there is a slight difference in general form, colour and texture.

As may be noticed on the Table, p. 810, the Alaskan output now exceeds all others in quantity.

SACRAMENTO RIVER SALMON.—The salmon, spring and fall, in the Sacramento, is quinnat, or chinook, a species identical with the Columbia and other chinook, but with some slight modification due to the locality. The heaviest harvest is generally in August, but salmon sometimes appear as early as January, and the spring run is generally good in April. The Sacramento fish is one of the best grades.

WASHINGTON AND OREGON COAST SALMON.—On Grays and Willapa harbours silver salmon is the principal pack. Black salmon, steelheads, are also caught. Rogue river salmon are a firm fish, mainly of the chinook variety. Cohoes are also packed in Southern Oregon.

FRASER RIVER SALMON.—The principal pack on the river is sockeye, and otherwise is similar to the run on Puget Sound. The main difference is that the Fraser river catch is in fresh water, in which the fish deteriorate, and the Puget Sound is entirely in salt water. The Fraser yield shows a marked decline in recent years, and much of it is attributed to the increased gear on Puget Sound which interferes with the entrance to the Fraser. (M. Eells, in *Sheldon Journal*.)

How it is Canned.—A few miles below the cascades is a large salmon-canning establishment. It stands on the banks of the Columbia river, partly overhanging it, and consists of three storeys, one on the level of the water, where the fish are received; the middle one, in which the chief work of the establishment is done; and an upper floor, on which the cans are manufactured. The fish are brought in from the wheels by steam launches, large quantities of them being floated from the wheels, and picked up by the launches as they come abreast of the factory. The salmon are immediately cleaned and scaled. Their heads, tails, and fins are cut off with marvellous precision and despatch. They are then placed in tanks filled with salted water "to slime," or be cleaned, the entrails, large bones, and other refuse being thrown into the stream. Chinamen do all the work, and the sight of them and the methods they employ is *not* appetising. In other districts, men, women and boys, do the work. Division of labour is in full force, and the fish, under operation of this law, is rapidly passed from hand to hand. It is placed upon a great knife —consisting of seven curved blades, if it be large, and three or four if small— worked by a powerful handle, and is immediately divided into small, equal sections. These are swept on to men who cut them into smaller pieces with large hand-knives. Then the fragments pass to another set, who cram a piece of the back and one or two pieces of the belly tightly into cans with their hands. As a record for 1900, one woman, Mrs. J. Adams, at a Blaine cannery in one day filled 4,080 tins, thus earning about 30s. at piecework. After being filled up with weak brine, they are soldered down by machinery, and passed on, by running bands, to the great ovens, where they are steamed for about an hour. The gas which is formed in the tins is then driven out through a tiny vent left

SALMON—(continued).

in the can for the purpose, by hammering the tin. When re-soldered, showered with cold water, and marked, it is ready for lacquering, labelling, and packing. If the process has been successful, the ends of the tin appear to bend inwards, but if they bulge outwards such tins are rejected, and thrown out. So expeditious is the method that a 50 lb. salmon, swimming at his ease in the Columbia River at 9 a.m., may be on his way, tinned, labelled, and boxed, to some remote quarter of the globe by 6.p.m.

Canning Combines.—Outside of the Alaska Packers' Association, a consolidation of many canneries on Puget Sound and in Alaska, there are three large salmon associations on the Pacific Coast. The Columbia River Packers' Association is reported to be a consolidation of interests on the Columbia, and otherwise merely a co-operative association of a few Columbia river canners to adjust prices. The Puget Sound Salmon Packers' Association is merely an association of all the local canneries to adjust prices or otherwise make agreements. Headquarters at Seattle. The Fraser River Salmon Canners' Association is composed of all the canneries there to adjust prices and otherwise work in accord. Headquarters, Vancouver, B.C.

In British Columbia the canners usually combine and agree on the price to be paid to the fishermen for salmon, and the amount to be put up at each cannery. Any canner breaking the agreement forfeits a certified cheque for $1,000, and anyone packing beyond the assigned limit has to divide his surplus among the other canners.

Under other English combination arrangements, a clearly defined difference in value is established between salmon caught in the different rivers, thus, Fraser River may be 21s. per case; Skeena, 20s. per case; Rivers Inlet, 19s. per case, but in face of this established difference of 2s. per case, between Fraser River and Rivers Inlet, it is asserted that much of the Rivers Inlet salmon is shipped under Fraser River labels.

It is to be regretted that the labels on Salmon (and indeed many other tinned goods) count for very little. They are often very misleading if not absolutely false. Not only are the packers names often *bogus*, but much of the flabby, light-coloured fish from Alaskan and other north-western rivers are unblushingly labelled and sold as "Columbia River Salmon," "Sockeye," etc. In fact, large buyers are frequently offered a choice of showy labels or names that they may prefer for a given parcel.

It should also be known that a company of Chicago fish-packers have established a plant at Lacrosse, Wisconsin. Tons of catfish from the Mississippi are there smoked, chemically treated with a solution which gives the colour and taste of salmon, and then canned and labelled as a brand of salmon. A large proportion are then exported to Europe. The counterfeit is very difficult to detect.

From what has appeared in the daily Press from time to time, and from the physical conditions of tins occasionally met with, it is probable that a considerable quantity of salmon undergoes putrefactive changes before being tinned. Some of it betrays its lack of freshness by its dry, salty taste. In tinned fish, *ptomaines*, as evidenced by the "blown" or puffy condition of the tin, are the cheap poison, and salmon is the kind of fish which, in nearly all cases, has been associated with poisoning; but, of course, it is the kind most largely used, so that the disproportion may, after all, be only imaginary. All canned meats, when opened under certain conditions of the atmosphere, are also liable to be acted upon rapidly by bacteria, which form toxines, some of which are declared to be more dangerous than the mineral poisons, and this is particularly so in regard to fish, salmon being the worst. When the tin is first opened, the salmon should be at once turned out into a plate, jar, or other clean vessel, and never put back nor kept open in the tin. Tinned salmon, in a yellowish, soft, and friable, or

"mashy" condition, should be avoided, so also when the inner of the tin is corroded, or the plating discoloured.

For latest news about the salmon canneries, read the *Trade Register*, published weekly at Seattle, Washington, U.S.A.

Salmon Importers and Merchants.—Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool, Proprietors of the "Dee" Brand.

Cannery Agent and Shipper.—P. F. Kelley, Seattle, Washington, U.S.A.

Saloop, or **Salop.**—See *Salep.*

Salpicon.—The French term for a mixture of chicken, game, etc., with truffles and *foie gras*, all cut into dice and mixed with sauce.

The term is also used in stuffing or larding put into beef.

Sal-Prunella, or **Prunella Salt.**—This is refined saltpetre, or nitrate of potash. After being refined, the substance is usually made up into balls, tablets, or cakes.

Salsify, or **Oyster Plant.** — F. *Salsifis.*

A kitchen garden composite plant, botanically named *Tragopogan porrifolius*, or *Scorzonea hispanica.*

SALSIFY.

Its edible root is very similar to the carrot in shape, but of white colour, and fleshy. It is also sweet and tender, with an aromatic flavour, very like that of the oyster, and contains much white milky juice. The stem of the plant grows 3 or 4 feet high, and has smooth, grassy, or spiky leaves resembling those of the leek, and dull purple flowers. The flower stalks are often cooked like asparagus.

Salsify is a biennial, and often grows wild in meadows in different parts of Europe. It is cultivated in same way as carrots, and may be left in the ground all winter for early spring use, or stored like carrots. It forms a very delicate and pleasant vegetable, and is generally boiled and served with melted butter.

Sal-Soda. —A commercial name in America for *Carbonate of soda.*

Salt.—Ar. *Melh;* Chi. *Yen;* Da. and Sw. *Salt;* Du. *Zout;* F. *Sel;* G. *Salz;* Hin. *Nimmuck;* It. *Sale;* Mal. *Gharam;* Per. *Num;* Rus. *Sol;* Sp. and Port. *Sal;* W. *Halen.* (See *Rock Salt, Cat Salt, Bay Salt,* etc.)

Although the term salt in chemistry means generally any combination of an acid with a salifiable base, the word *salt*, in ordinary use, is confined to the well-known seasoner and preserver of food, its chemical name being *Chloride of sodium.* It is about the only mineral food voluntarily eaten by civilised human beings, although others are administered medicinally. It is produced from three different sources—bay or sea salt, rock or mine salt (often commercially called *Sal-gem*), and natural brine, or pit salt.

The two former, bay salt and rock salt, are described under their respective headings. Ordinary table or *white* culinary salt is, in this country, nearly all made out of the natural brine from wells or springs (which, however, are only melted rock), as in Cheshire and Worcestershire, these counties furnishing about one-third of the whole of the table or fine salt consumed in Europe. About two million tons of salt is produced every year in the United Kingdom, the value averaging about 7/- per ton.

SALT—(continued).

The brine is formed by the percolation of rain-water through the strata which lie above the rock salt formation, dissolving it, and so forming under ground cakes of brine, holding about 25 per cent. of salt in solution. The mineral and other impurities sink to bottom, and only the pure brine is pumped up. During 1895 the Cheshire shipments alone amounted to 642,566 tons. A very superior quality of salt is obtained by dynamite explosion from the Lake of Bardymkul, in the neighbourhood of Chodjent, in Ferghana, Turkestan, and is said to surpass in flavour any salt produced in England.

Salt is manufactured in much the same way now as it was 1,000 years ago, and but very few and trifling improvements have been introduced. The brine, although often found in ditches, surface springs, and pools, is mostly pumped out of very deep wells into elevated reservoirs, whence it can be run by simple gravitation into large and shallow wrought-iron or steel pans, each 20 or 30 feet square, by 10 to 20 inches deep, and generally with a coal fire underneath; but sometimes, instead of a coal fire, the spare or waste heat from a steam boiler is utilised and led in pipes through the brine in the pans, the brine being steadily agitated during this boiling or evaporating process. The salt thus produced is either large and coarse or small and fine, according to the degree of heat applied. The less the heat and the longer the time in the pan, the coarser and larger the grains of salt; while the greater the heat, the shorter the time required, and the lighter and finer the product.

For lumps, or fine-grained table salt, the heat must be about 226° F., which is the boiling point of brine. Small granular crystals soon form on top, and eventually subside to the bottom. For "common" salt the temperature is made 160° to 170°, and the salt formed is close in texture, but in larger pyramids. A larger-grained flaky quality is produced at 130° to 140° of heat, and large-grained fishing salt 100° to 110°.

The largest-sized crystallised cubes require about a fortnight in the pan; in fact, the longer they remain the larger they become, until a thick layer at the bottom of the pan would prevent the heat reaching the brine to keep it sufficiently hot. As fast as the brine is condensed, fresh brine is running into the pan, and the salt which forms at the bottom is "drawn" or scooped out every eight hours with a perforated iron instrument, and filled into moulds or tubs, where it drains and dries in about half an hour. It is then turned out of the mould in a block, and is carried into a stove situated at the back of the fires, where the blocks remain till perfectly dry throughout, which is proved by "ringing" or sounding them. They are afterwards stored in a room over the stove till sold as *stoved lumps*. The moulds are made of a size that will make oblong blocks or *handed squares*, about 14lbs. each.

Sometimes these lumps are broken up, ground, and sifted very fine, for sale in proper packets, bags, or jars as *Refined Table Salt*.

If not well dried before packing, and kept dry, it will go hard in the bottles and jars so as to require hewing out. It should not be packeted in thin common paper, or the atmosphere will make it go damp, and burst the paper, but should be made up in damp-proof packets, so as to resist atmospheric moisture and keep dry and loose.

Sometimes the salt is only boiled, and not stoved at all, nor even made into lumps, but sold loose as *Butter Salt*, *Cheese Salt*, etc.

Sea Salt (see p. 81) means the salt obtained by the evaporation of sea water. *Rassol* is a name given to salt deposited by the intense cold on the surface of ice-fields, as in the Polar regions.

The preserving quality of salt is due to its power of attracting moisture, by which action it tends to harden whatever moist substance is brought into contact with it, and when it has obtained moisture it becomes soft, and loses its flavour. It is soluble in 8·82 times its weight of cold water, and in 2·76 of boiling water.

Table salt consists of two-thirds

chlorine and one-third sodium. Its specific gravity is 2·125, and when pure it is colourless and transparent.

Wych or *Wich* are Celtic words for salt springs, and in England often terminate the names of places where salt is or has been found, as Droitwich, Nantwich, Northwich, etc. The Sermon on the Mount has, no doubt, puzzled a great many people: "Salt is good; but if the salt have lost its savour, wherewith shall it be salted?"

This may be explained by the fact that the salt used in Palestine is very impure, containing large quantities of magnesium chloride, and that if kept in a damp place it becomes very bitter, and "is neither fit for the land nor yet for the dunghill."

Without salt and saline constituents, carnivorous life soon dies of starvation. Professor Loeb and Dr. Lingle, physiologists at the University of Chicago, declare that common salt is the true elixir of life. They assert that salt not only keeps the heart in action, but may cause it to beat again after pulsation has ceased. In experimenting, the professors have used the hearts of turtles and various other fishes and animals. The yearly consumption in England is about 22lbs. for each individual.

In 1798 a duty of 5/- a bushel was payable on salt, and this tax was afterwards increased to 15/-; but it was finally repealed in 1823.

In France there is still a heavy duty on it, while in Spain, Egypt, Italy, and some other countries it is a State monopoly. In Italy it is joined to the Lottery system; and no one may draw a bucket of water from the sea without permission, lest he should evade the tax by extracting the salt contained in the water.

Salt is used largely in the preparation of glaze for coarse pottery, and immense quantities are used as manure in agriculture.

Salt Cake.—A name for the sulphate of soda made at alkali works for the use of crown-glass manufacturers and soap makers.

Apply to John Nisbet & Co., Salt Merchants and Exporters, 18 Mains Street, Glasgow.

Gardner's patent "Rapid" Sifter and Mixer, freely used for above. Prices from 50/- to £100. Catalogues from Wm. Gardner & Sons, Engineers, Gloucester.

Salted Fruits.—(See also *Preserves.*)—These comprise olives, lemons, oranges, citrons, limes, walnuts.

The preservation of citrus fruits destined for export from Italy and other countries, and not for immediate consumption in their integrity, but which are, nevertheless, valuable articles of export on account of the various uses to which their juices, rinds, etc., may be applied, is a very important object where the shipment and conveyance to distant parts would be impossible, either on account of the distance or the unsoundness of the fruit, or from both causes combined. It is, therefore, customary in Italy to slice and steep the fruit in large casks filled with salt and water.

The bitter oranges, lemons, or citrons are first of all examined, and although not subjected to the same crucial tests which would be required were the fruit to be shipped entire, or the essence properties considered, still they must not be internally diseased, and must be of average juiciness to be exportable and marketable.

They are then soaked in salt water for a few days, the time varying between three and eight days, according to the more or less maturity of the fruit. On the arrival of the fruit it is immediately washed in fresh water until the salt therein has been completely dissolved and carried off. It is, however, unquestionable that, whatever the preserving quality of the salt, the process involves an almost total loss of the essential oil of the peel, and a deterioration of the juice, and is, therefore, only resorted to in extreme cases, when the fruit would not be otherwise profitably used on the spot where grown.

At Syracuse, owing to the low prices of fruit and over-production, the industry of salting peel, both of the bitter

orange and lemon, is rapidly increasing. The fruit is cut into halves, and packed in casks, to each of which is added 28 kilos of salt and sea water; the fruit is then left for some days to ferment, and when the fermentation is completed the sea water is drained off, and the casks are refilled with prepared peel; sea water is again added, and they are then ready for exportation. Each cask contains about 3,000 lemons, the total weight of each cask being about 500 kilos, though it only contains 350 kilos of peel, the surplus being salt and sea water. (See also pp. 171, 242, and 532.)

Saltpetre—also known as *Nitre*, *Nitrate of Potash*, etc.—is a natural product occurring on the surface of the soil in certain hot and dry countries. It is also prepared artificially in France, Germany, and other places. The British supply comes chiefly from the East Indies. Besides being the chief ingredient in gunpowder, it is largely used in chemistry, medicine, pickling, and the arts.

Sal Volatile (pr. *sal-vo-lat'i-ly*).—This is an old name for carbonate of ammonia, dissolved in spirits and flavoured with aromatics, and often used as a smelling salt.

It should consist of the following proportions:—4 ozs. carbonate of ammonia, 8 fluid ozs. strong solution of ammonia, 4½ fluid drachms oil of nutmeg, 6½ fluid drachms oil of lemon, 6 pints rectified spirit, and 3 pints water. Nutmeg oil is often used.

It should be kept in bottles, closely stoppered. If frequently opened it is liable to lose its strength, and hence retailers are often fined for selling it below its proper spec. grav. or strength of ammonia.

Sami-stone or **God-stone.**—A peculiar kind of stone, found in the Island of Samos; but these names are now often applied to two or three varieties of agalmatolite and steatite. Samistone is much used in China and India for the manufacture of images and figures. In this country it is chiefly used for putting a finishing polish on steel, sword-blades, bridle bits, and on gold, silver, etc.

Samovar.—A popular dish throughout Russia, where it is to be found steaming in every household.

The "samovar" is the utensil used only for boiling the water. They are usually made of brass or copper, but there are also silver samovars, the inside being lined with another metal. In the middle there is a kind of chimney or fire receptacle, around which fresh cold water is poured into the samovar. Burning charcoal or wood is thrown into the chimney, and it usually takes about a quarter of an hour before the water begins to boil, this being announced by a volume of steam from under the cover. Then the boiling water is poured upon the tea in the pot, and the latter placed on the top of the samovar to keep warm, as tea-cosies are unknown in Russia. The infusion is made very strong, but only about a fifth or a quarter of a glass is filled with it, the rest being filled up with the boiling water. A slice of lemon or milk is added according to taste, and sugar is put into the glass, or used "v prikusku," as described above. There is no "respectable" household in Russia without one or more samovars. The utensil is turned out by the million. Tula, the Russian Sheffield, is particularly famous for the production of this article. The samovar is in use three or four times a day, in some houses, indeed, it is kept boiling the whole day long. The samovar may be really termed the Russian hearth and fireside. Around it the family and guests assemble drinking tea and chatting for hours. Its steaming and cheerful humming are as music to the Russian ear, accustomed as it is to the sound from earliest childhood. Even when leaving their native soil for far distant lands, when luggage has to be reduced to a minimum, the indispensable samovar is rarely left behind, and in the new countries of their adoption it forms frequently a melancholy link with the past.

Samp.—An American name for pearled maize, largely used in preference to rice. (See *Maize*.)

Samphire (pr. *sam'fire*).—This succulent and umbelliferous herb, botanically known as *Crithmum maritimum*, is a perennial, and native of Europe. It grows in the clefts of rocks and steep cliffs on the sea coast, and its collection is often attended with considerable danger.

It is chiefly valued for the piquant taste of its young, fleshy, and saline leaves when pickled, a use for which they are admirably adapted, and for the pleasant aromatic oil obtained from the plant. The leaves are also considered an excellent addition to salads.

SAMPHIRE.

A variety of glass-wort, common on low muddy shores which are not often covered by the tides, is sometimes sold under the name of *Marsh Samphire*, but it is very inferior in flavour.

Samphire Soap.—A patented preparation. It is saponified by iodised potash, obtained from seaweed ashes, with palm oil and olein.

All water is afterwards expelled from the soap by milling, and it is also dealkalised by ammoniacal salts.

Samshu or **Samshoo.**—See *Chinese Spirits.*

Sandal or **Sanders' Wood Perfume.** — This is prepared from the seed, oil, or wood of certain trees (*Santalum album*, etc.) grown on the coast of Malabar.

Sandarac. — A white juniper resin, in round or long tears, not unlike mastic, but brittle. It is obtained from the *Thuja articulata*, in Barbary and Central Africa.

Sandpaper. — This abrading material is prepared in much the same way as emery paper, but, instead of emery, sharp river or pit sand is used. Sometimes burnt and ground flint stones are employed, but sea sand, which has been rounded by the washing of the waves, is too smooth. About half a dozen grades of sandpaper are made, differing in degrees of fineness, the sand being sifted for the quality required.

Sandpaper is used for cleaning steel goods that have become rusty, smoothing woodware and tool handles, and for polishing metals; but it is more liable to scratch and injure valuable articles than fine emery paper, and in this respect is intermediate between emery paper and glass paper.

Sangaree or **Sangara.**—A popular West Indian beverage, made of lime juice or lemon juice syrup, Madeira, or other red wine, and brandy, flavoured with nutmeg.

It is usually taken iced, as a cooling drink.

Sangara is the West African name for any cheap, weak spirit, made stronger and perfumed with hot spices.

Santa Fe Tea.—Prepared in New Granada from the plant *Styrax Alstonia.*

Santorin Wines. — Produced in Greece. Better for keeping than most Greek wines, and greatly improve with a little age.

Sapodilla or **Sappodilla Plums.**—A name for the Soursop fruit *Anona muricata.* (See *Naseberries.*)

Sapsago Cheese.—Same as *Schabzieger.*

Sapota.—A sort of chewing gum obtained from *Dichopsis gutta*, the leaves of which have a dull green upper surface, but below are covered with close, silky, golden-orange tomentum, the two distinct colours giving a characteristic appearance to the tree. "Gutta" is the Malayan term for gum or juice, including the product of this tree. Chewing gums are referred to at pp. 219 and 221. They are said not only to increase the flow of saliva, but to relieve indigestion and dyspepsia, especially if they contain a little pepsin.

Sapucaya Nuts (*sap-o-ki'-a*).—The edible seeds of two species of tall forest trees, *Lecythis zabucaio* and *L. Ollaria*, growing in Brazil and adjacent countries.

These remarkable trees are closely allied to the Brazil nut tree, *Bertholletia excelsa*, and grow 180 to 200 feet high, with trunks 50 to 60 feet in girth.

The first-named bears the best-flavoured nuts, and the seeds of the latter yield a rich edible oil, but this soon goes rancid, and is mostly used in soap-making. The nuts are about two inches long by one wide, of oval or urn shape, pointed at each end, and covered by a corky capsule, which falls off when ripe.

The large capsules, falling to the ground from a great height when ripe, are burst open, and the nuts scattered all around. The empty capsules are used by the natives in Para as drinking cups. *Sapucai* is an Indian name for fowl.

Saracen or **Sarrasin.**—Continental names for *Buckwheat*.

Sardines.—Da. and Sw. *Sardeller;* Du. *Sardynen;* F. *Sardines;* G. *Sardinen;* It. *Sardelli;* Nor. *Sardiner;* Pol. *Sardely;* Port. *Sardinhas;* Rus. *Sardeln;* Sp. *Sardinas.*

The sardine industry, as now exploited, originated at Nantes about 1834, but did not attain much importance till 1850, and the best qualities still come from that and other points on the Western coast of France. There are sardines and sardines. The name was derived from the Island of Sardinia, on the coast of which many are caught. They are a species of the herring tribe, and naturalists are puzzled to show any material differences between pilchards and sardines. In fact, the family seems to include the whitebait, the sprat, and the pilchard. The several sizes are supposed to be merely differences in age, and it is thought that full-grown sardines really become pilchards.

The fish are born in the Mediterranean, whence, on the first approach of fine weather, they pass along the coast of Spain, and reach that of France about May; but in Provence, on the Mediterranean, the fishing begins in March and ends in June, while on the coasts of Brittany it only commences in July and finishes in October. The shoal increases as it proceeds north.

The well-known French sardines are mostly found in shoals along the coast of Provence, off the south coast of Brittany, from La Rochelle to Cape Finisterre. The smallest are nearly all taken in the Vendée fishing grounds, and the largest off the Finisterre coast.

Sardines are also taken on the coasts of Algarve, in Portugal, from January to March; Andalusia and Granada, in Spain, during March and April; and along the shores of the Adriatic Sea.

It is said there are enormous quantities of sardines to be found in the Indian Seas, at the south of Bombay, all the year round, particularly off Karwar, Kumpta, and Honovar. A few are taken by the natives, but there are no factories.

The French seem to excel all other nations in the preparation of sardines, and this industry is one of the most important of Brittany.

Nantes is still the headquarters of the trade, nearly all the best brands coming from there. The French claim that these sardines owe the peculiar delicacy of flesh and the fineness of flavour to the depths of the sea in which they are caught. It appears to be considered highly important to deal with the fish while *fresh* as possible, hence the factories are built very near where the fish

SARDINES—(continued).

are caught, and the first-class manufacturers will only use the freshest fish. A few hours seriously deteriorate the flavour. Along the whole length of the Vendée coast, from Les Sables d'Olonne to Camaret (Finisterre), there are about 150 canning factories, employing some 10,000 women and 2,000 men.

The Vendée fishing season lasts about five months, say from June to October, and about 2,500 boats, equipped with about 15,000 sailors, engage in it. The fresh fish, as caught, are sold to the factories at 25 to 35 francs per 1,000, according to season, but this does not always mean exactly a thousand sardines. At Belle Isle, for instance, 1,240 fish make a thousand.

The shoals are occasionally so large and dense that many of the little fish are actually crushed out of the water. Cod's roe, imported from Norway and Newfoundland, is used as a sort of ground bait, and large quantities of it are thrown into the sea to attract the shoals of sardines, so that the fishermen's success depends mainly on whether cod roe is cheap or dear.

Of the two classes, or rather sizes, of fish taken, the principal is locally distinguished as *Sardines de rogue*, which are captured in large quantities off Cape Finisterre.

They are young and delicate, and in length from 12½ centimetres, in June, to 16 centimetres, in October. The larger or adult size, from 20 to 35 centimetres long, is netted in winter, and it is this size of sardine which appears to be equivalent to our typical Cornish pilchard. It is, however, the smaller kind which are esteemed by epicures as being superior to all others. All the fish are caught in nets, the mesh of which is only just large enough to let through the head of the sardine, which is thus caught by the gills or fins. They give a little squeak when first raised from the water, but die almost instantly. After being well washed, the head is deftly severed by simply bending it downward, and with it the entrails are also drawn, without removing the roe, and the fish are then sprinkled lightly with salt.

After lying on wooden slats for a few hours to drain, they are placed on wire nets or "grills," in rows, and almost perpendicular, and the frames are then placed in large pans containing boiling olive oil. This oil is usually changed as soon as it becomes too black and dirty for continuing the cooking. This cooking is a nice process, for if overdone the scales of the fish come off, which impairs the market value. As soon as the fish are considered sufficiently cooked—five or six minutes usually sufficing—they are withdrawn from the pans of oil, and grids are placed on the tables covered with zinc, the surface of the table inclining towards a groove in the centre. The oil is thus carried into a vessel prepared to receive it. Round the table stand the women whose business it is to pack the fish closely and uniformly in the tin boxes. The oil being more costly than the fish, the latter are packed tightly as possible.

The boxes being full, the fish are covered with fresh olive oil, and it is mainly on the quality of this that the goodness of the product depends. The best oil generally used is that imported from Bari, Italy. The lids of the tin-boxes are next soldered down, and thus hermetically sealed they are placed in iron baskets and immersed in boiling water.

The smaller tins or boxes are thus boiled for half an hour, and the larger ones somewhat longer, in proportion to the size of the box. During this boiling the oil will escape from all tins not properly soldered, but, as the workman has to pay, not more than one or two tins in 100 are faulty. The tins are then allowed to cool gradually in the water without being moved, and after being rubbed over with sawdust to cleanse and polish the tins, they are finally packed in wooden cases of 100 tins, ready for sending all over the world.

The usual sizes are—Large halves (or ½ kilogramme), of 20 to 24 fish (18 ozs. gross); halves, 14 to 16 fish (14 ozs.); and quarters (¼ kilogramme), 9 to 12 fish (7 to 8 ozs.).

SARDINES—(continued).

Low-priced packs are often prepared by first cooking the fish—sometimes sprats, shiners, roach, or dace—in ovens, without oil, and then continuing the ordinary process, only, instead of using the best olive oil, it is mixed with or substituted by cotton-seed oil.

Rubbishy imitations of French sardines are made up in Spain and Portugal, but good quality requires not only olive oil that will keep good, but the choicest fish, and utmost care and cleanliness in preparing them, and these cheap and nasty brands are surely bringing the fame of sardines into disrepute.

The noted French packers always use Bari oil, although very good keeping olive oil is now produced in Tunis and Algeria.

Dalmatia has for upwards of 30 years been canning sardines after the French method, large numbers of the fish being caught in the Adriatic, near Lissa and Lesina. The first factory was established at Fiume in 1861, and others have since been opened, with varying success at Duino, Grado, Isola, Fasano, Rovigno, and Lissa, but Dalmatian oil does not seem to be suitable for sardines.

American Sardines. — These, like Russian sardines, are really small herrings, about 9 centimetres long when the head has been removed, but connoisseurs aver they are fully equal to the French if put up in genuine olive oil. On the coast of Maine, sardine preserving has been carried on for some 20 years. There are now about 60 factories. The centre is at Eastport, in Passamaquoddy Bay, but Lubec, on the southern shore of the same bay, also carries on the industry on a large scale, and there are manufactories likewise at Jonesport and along the coast of New Brunswick.

The fish are treated in much the same way as in France, and the boxes almost invariably marked with French labels, but about one-third of the product are prepared with tomato and mustard sauce. Some consist of large herrings preserved with spices and mustard sauce, labelled "River trout," "River eel," and all sorts of names. (See *Moss Bunkers.*)

An increasing quantity of American sardines are now put up yearly both in Maine and California, but mostly in cotton-seed oil. Inferior tin and solder has also been used, so that analysts have found as much as three grains of lead in each ounce of oil. American sardines are also now exported to the West Indies and South America, and, of course, sold much cheaper than the French.

Sardines with Anchovy, or *Anchovied Sardines*, a name given to sardines which have been cured in red brine, and packed in vessels previously employed for holding wine; the true anchovy being a scarcer and dearer kind of fish than the sardine. They are called by the French *Anchoisées.*

Boneless Sardines are a quality made at Concarneau and Douarnenez almost especially for the New York market. Their preparation requires special care, and they command high prices.

Sardines with Tomatoes are now packed in the ordinary size tins, and are likely to have an extensive sale, being also lower in price, weight for weight, than sardines alone.

Sardines are sometimes put up in butter instead of oil, but as the butter used is usually of inferior quality, it is often removed before using, and the tins have also to be heated.

Other preparations are — *Smoked Sardines*, *Sardines au Citron*, *Truffled Sardines*, and *Sardines in Vinegar*—the latter requiring to be well washed before being used.

Sardines, especially those of large growth, improve with a little age, after being tinned, say, 12 or 18 months, but if kept too long they turn soft and disagreeable; and, like most other fish, if kept long after opening the tins, they soon lose their exquisite flavour, and become insipid.

The following comparison of prices per dozen tins, and per case of 100 tins, may be found useful:—

Doz.		Case.	
s.	d.	s.	d.
2	0	16	8
2	1½	17	8½
2	3	18	9
2	4½	19	9½
2	6	20	10
2	7½	21	10½
2	9	22	11
2	10½	23	11½
3	0	25	0
3	1½	26	0½
3	3	27	1
3	4½	28	1½
3	6	29	2
3	7½	30	2½
3	9	31	3
3	10½	32	3½
4	0	33	4
4	1½	34	[illegible]
4	3	35	5
4	4½	36	5½
4	6	37	6
4	7½	38	6½
4	9	39	7
4	10½	40	7½
5	0	41	8
5	1½	42	8½
5	3	43	9
5	4½	44	9½
5	6	45	10
5	7½	46	10½
5	9	47	11
5	10½	48	11½
6	0	50	0
6	1½	51	0½
6	3	52	1
6	4½	53	1½
6	6	54	2
6	7½	55	2½
6	9	56	3
6	10½	57	3½
7	0	58	4
7	1½	59	4½
7	3	60	5
7	4½	61	5½
7	6	62	6
7	7½	63	6½
7	9	64	7
7	10½	65	7½
8	0	66	8
8	1½	67	8½
8	3	68	9
8	4½	69	9½
8	6	70	10
8	7½	71	10½
8	9	72	11
8	10½	73	11½
9	0	75	0
9	1½	76	0½
9	3	77	1
9	4½	78	1½
9	6	79	2
9	7½	80	2½
9	9	81	3
9	10½	82	3½
10	0	83	4
10	1½	84	4½
10	3	85	5
10	4½	86	5½
10	6	87	6
10	7½	88	6½
10	9	89	7
10	10½	90	7½
11	0	91	8
11	1½	92	8½
11	3	93	9
11	4½	94	9½
11	6	95	10
11	7½	96	10½
11	9	97	11
11	10½	98	11½
12	0	100	0

Leading Merchants.—Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool, also Proprietors of the "Louis Victor" Brand French Sardines; J. A. Sharwood & Co., Limited, St. George's House, London, E.C., highest grades only.

Sarepta Mustard.—(See also *Mustard Seed.*) — The name given to a variety of dark mustard seed, grown mostly in Russia.

Sarsaparilla.—Ar. *Muckwy;* Da. and Sw. *Sassaparill;* Du. *Sarasparille;* F. *Salsepareille;* Ger. *Sarasparillo;* It. *Salsapariglia;* Sp. *Zarzaparilla.*

From *zarza* (a Biscayan word for thorn), and *parilla* (a vine).

A valuable tonic and alterative drug from the rootlets of the plant *Smilax ornata*, native of Costa Rica. There are several kinds of climbing evergreens which pass under this name, but the red-bearded varieties from Jamaica are the best. The rootlets are very numerous, about the size of a goose-quill, and several feet long, running superficially under the ground. Many of these slender, dried roots come to this country in bales from Honduras, Guatemala, Para, etc.; and the non-mealy varieties from Jamaica, Mexico, and Quayaquil, the annual importations amounting to some 150 tons.

The reputation of sarsaparilla, however, suffers from worthless substitutes, or from the roots being kept too long.

A false kind of sarsaparilla root comes from the Amazon River. Its exact botanical source has not yet been definitely traced, but it is undoubtedly derived from a liliaceous plant. It contains no calcium oxalate, and sugar in place of starch, although outwardly its anatomical structure is very similar to the genuine drug.

Many of the patent medicines called Sarsaparillas, and the syrups drunk in soda, do not contain a particle of the drug.

Sassafras Oil, Camphor, etc.—Flavouring extracts distilled from *Lauras sassafras* or *Nectandra pichoury*, a species of laurel, native of the Southern States of America, Cochin China, and several of the Indian islands. The wood, bark, and root have all a fragrant odour, and a sweetish aromatic taste. *Sassafras* or *Pichurin beans* are often used for flavouring chocolates. An oil may be obtained by distilling either the chips, crushed root, or the bark in water; and this oil, when cooled below freezing point, deposits the yellow substance called *Sassafras Camphor.*

The oil is often used in soapmaking, also to flavour tobacco and drinks, and is often adulterated with turpentine. Australian sassafras is synonymous with *Atherosperma moschata*, and in Tasmania a tea infusion is commonly made from it.

Sassafras or **Saloop Tea** is made from the leaves and bark of the sassafras tree, above referred to.

Sassoline.—A natural boracic acid, white and yellowish, which is found as a deposit from hot springs and ponds in the lagoons of Tuscany. It took its name from *Sacso*, in the province of Florence, where it was first discovered, and is used chiefly in the manufacture of borax.

Sauce Piquante (pr. *pick-ont*).—A French term for a sharp sauce, in which a somewhat pungent or acid flavour predominates.

Sauces.— F. *Sauces;* G. *Saucen-Tunken;* Port. *Molhos;* Sp. *Salsas.* The varieties of sauces are practically innumerable, but they may be classed under three heads—*Meat Sauces*, *Fish Sauces*, and *Sweet Sauces*. The last named, being intended for puddings and sweet dishes, are not usually sold in the shops, and do not, therefore, come within the scope of this book.

Of the other two classes there is a great number of manufacturers, and many of the productions are composed of wholesome, or at least harmless, ingredients; but there are several bottled sauces which the public would be better without. As articles of commerce they are (like German sausages) compounded according to price.

Sauces are generally considered as food adjuncts rather than nutrients, but adjuncts which give colour, flavour or perfume to insipid foods and thereby render them agreeable to flagging appetites, are entitled to high rank in culinary economy.

Stale meats which might otherwise be wasted may be rendered both palatable and stimulating.

The Greeks and Romans of old made their sauces mostly from fishes. *Garum* was a favourite prepared from the anchovy (*Encrasicholus engraulis*) common in the Mediterranean. Another less esteemed sauce or pickle, made from the tunny, was called *muria*. There was also another fish sauce, called *alex* or *halex*.

Of the scores of fanciful names now given to meat sauces, a few are referred to under their respective alphabetical headings. Almost every town in the kingdom has one or more sauces named after it or its local associations. All are, of course, said to be made from the choicest and rarest ingredients, and declared to be more delicious than any other.

The difficulty with the retailer is to know which will sell the best, and care should be taken not to get too much of each kind. Manufacturers push dozens and grosses where half a dozen would be enough, and most shopkeepers have suffered from overbuying.

These meat and fish sauces, or liquid seasonings, seem peculiar to England. In France next to none are made; they have been tried, but would not sell.

Some sauces have quite a history attached to them, and possess distinctive characteristics; but others are "very much alike," and, while calling for mention, scarcely demand definition. Many are mere haphazard concoctions, more like dirty water than salutary adjuncts for use with food.

A good *Worcestershire Sauce* may be made as follows:—Ingredients: 2½ gallons malt vinegar, 3 quarts soy, 1 quart lime juice (common), 1 lb. eschalots (or onions), ½lb. garlic, 2½lbs. tamarinds, ½lb. anchovies (or 2 pickled herrings), ¼lb. red chillies (or 2 oz. ground cayenne), and ¼lb. cloves, ground. Boil all the above proportions together for about 20 minutes, then strain through a fine hair sieve, and, when cold, add a few drops of essence of lemon. The addition of a minute quantity of asafœtida is an improvement.

The garlic and eschalots or onions should be peeled and bruised, and the fish cut in pieces; and the pan should be stirred steadily all the time, to prevent settling and burning. Although a

typical "Worcestershire Sauce," it may be called by many other names.

Another excellent sauce is made from the following ingredients:—7 gallons vinegar, 1 gallon soy, 3 gallons mushroom ketchup, ½ gallon walnut ketchup, 1 lb. treacle, 4 lbs. raw sugar, 3lbs. sultana raisins, ½lb. ground nutmegs, ½lb. ground cloves, ½lb. ground cayenne, 1lb. bruised garlic, ½lb. lemon peel, 1lb. cornflour, ½lb. salt, ½lb. pimento, and 4lbs. fresh liver. Boil the liver, lemon peel, sultanas, and spices till soft enough to be rubbed through a small sieve, and finally boil all up together quickly, thickening it with the corn-flour. Keep it well stirred, and when aqueous, pass through the sieve, cool, and bottle.

Yet another is made from:—Hog's liver, 24lbs.; water, 10 gals.; White vinegar, 15 gals.; walnut ketchup, 10 gals.; mushroom ketchup, 10 gals.; Madeira wine, 5 gals.; table salt, 25lbs.; China soy, 4lbs.; powdered allspice, 1lb.; powdered coriander, 1lb.; powdered mace, ½lb.; powdered cinnamon, ½lb.; Asafœtida dissolved in brandy, ¼lb. Boil the liver with the water for twelve hours, then chop up the liver, work with the water, and strain. To this add the rest of the ingredients.

Horse Radish Sauce.—Cover one pound of sliced root with spirits of wine, 95 per cent. alcohol, and keep tightly corked. This is added, drop by drop, to any of the white sauces used for meats or fish until the desired flavour is obtained. When mixed with a little fresh mustard and a little red pepper this tincture makes an excellent sauce for boiled beef or deviled chicken. On account of its volatile nature it should never be left uncorked, and should be added to the final sauce just before being served. (See also p. 473.)

Boiling sauce sterilises it and kills the organisms of fermentation, but if it is boiled too long—say over ten minutes—a good deal of the strength of the vinegar or acetic acid is wasted, and lack of acid may lead to fermentation. The sugar and soy with the vegetable matter should always be boiled in the vinegar. Sauce should be bottled right off while hot.

Special manufacturers: Allen Jeeves & Sons, Seddington, Sandy, Beds; Charles Cocks & Co., Reading (see Reading Sauce); Morris & Jones, Sir Thomas Street, Liverpool.

Motor Sauce.—*The Original Gold Medal* Wiltshire Sauce.—The Wilts Vale Sauce Co., Trowbridge, being Sole Makers. Rep. ½ pts. 42s. per gross.

C. Windschuegl & Co. (Sauce Ingredients) 1 Leadenhall Street, London, E.C.

A remarkably hot and luscious American sauce not often seen in England, but deservedly popular in the United States and Canada is put up by G. A. Bayle, St. Louis, and labelled "*Bayle's Tabasco Pepper Sauce.*"

Sauer Kraut.—See *Sour Crout.*

Saumur Wines. — These white French wines take their name from the town of Saumur in the Maine-et-Loire Departement. They closely resemble Champagne, and, being prepared in same way, are but little inferior. They owe their sparkling qualities to the chalky nature of the ground on which the grapes are grown, and they require strong bottles to avoid bursting.

Sausages. — F. *Saucisses, Saucissons;* G. *Wursten;* Port. *Salchichas;* Sp. *Chorizos, Salchichas;* W. *Selsigen.*

The stuffed sausages of modern times are descended from the "gizzards filled with blood and fat," which the ancients used to roast. They were popular with the Romans in the time of Nero, strongly spiced and cooked in small tin ovens. Civilisation has, however, dealt with sausages as with other matters, and about nine hundred years ago the enlightened Emperor Leo V. promulgated the following inexorable edict:—"We have been informed that blood is packed into intestines as into a coat, and set before man as an ordinary dish. Our Imperial Majesty can no longer permit the honour of our State to be tarnished by these abominable devices of the gluttonous. Whoever henceforth converts blood into food shall be

SAUSAGES—(continued).

severely scourged, smoothly shaved, and banished from our realms for ever."

Nevertheless, sausages have survived Leo V., and are more used in Italy than anywhere else. Perhaps the German *Hanswurst* may dispute this, but it is the fact.

The demand in Tuscany far exceeds the local supply, but the Bologna district produces most of all. In Florence a special sausage for the working classes is prepared with pepper and garlic as ingredients, as well as an additional kind with fennel seeds, and vast quantities are exported to all the great cities of Europe.

One of the finest Italian makes, is the "Salami" (see p. 807), which is also made in Hungary and imitated in Chicago.

But for *variety* no country in the world equals Germany. Hamburg is not only a great centre for these luscious comestibles, but has also a special reputation for *sausage casings*. The three kinds of cattle intestines used in Germany are the running intestine for "Bolognas," the middle intestine for *Ham and Chicken Sausages*, as well as for the *Leberwurst*, while the "bung" is used for the largest German sausages.

The most popular kinds made in Germany are *Abfallblutwurst*, made from sinews and butchers' refuse with bacon and pig's or ox blood.

Blutwurst, composed of bacon and pork, sometimes with the addition of heart and kidney, and with or without flour. It is mixed with about an eighth of its weight of fresh pig's blood and boiled. These blood sausages or black puddings are apt to decompose sooner than ordinary meat sausages.

Bratwurst is prepared from fresh raw pork and ham with salt, pepper, etc., and sometimes contains lemon-peel or cumin.

Braunschweiger Cervelatwurst (Brunswick brain-sausage) is prepared from pork and lard often with the addition of beef or horseflesh. This sausage is often coloured with fuchsin.

Buntwurst same as *Rothwurst*.

Erbswurst.—See p. 359.

Frankfort, or *Vienna Würstchen* are small sausages about the length of a finger, composed of raw, lean pork, seasoned with salt, pepper, etc.

Ganselebertrufflewurst, or pâté de fois gras and truffle sausage is very popular among Germans at Christmas-time.

Gehvin (*Brain Sausage*) consists principally of calves' brains and pork.

Holsteiner Bauernwurst (Holstein peasant sausage) is another speciality much in evidence at the fashionable delicatessen stores at Christmas.

Knackwurst (*Crackling Sausage*) is a hard, smoked sausage, about 15 cm. in length, with the same composition as *Cervelatwurst*, but differing in the flesh being previously cooked.

Knoblauchwurst (*Garlic Sausage*) has the same composition as Knackwurst with the addition of garlic.

Leberwürst (*Liver Sausages*) are prepared from pigs' or calves' livers, thoroughly cleansed from blood, and mixed with a certain proportion of lard and pork, and cooked. The constituents and the proportions vary in the different kinds of liver sausage, such as the Mecklenburg and Brunswick makes.

Lungenblutwurst, only differs from *Blutwurst* by containing finely minced lung.

Magenwurst, similar to *Rothwurst*, but contains less blood and rather more fat. The sausage mass is finally packed in a cleansed pig's stomach.

Mosaik Sausage is a mixture of pork and beef, with spices, etc.

Polony Sausages derive their name from a corruption of "Bologna." They contain partly cooked pork. (See p. 730.)

Presskopfwurst is largely composed of pickled and boiled pig's head.

Rothwurst or *Buntwurst*.—These are Red Sausages with similar ingredients as English Black-puddings. Pork is boiled for about three-quarters of an hour, flavoured with salt, pepper, pimento, etc., and after admixture of some warm, fresh blood, placed in the skins and boiled.

Schlackwurst. — Another name for Braunschweiger Cervelatwurst.

Schwartenwurst and *Sulzenwurst* consist of lightly cooked unsalted ham, to-

SAUSAGES—(continued).

gether with skin, etc., boiled soft and a little blood.

Zungenwurst. — Composed of tripe, pig's head, and fat pork from a young pig, finely minced, and mixed with a small quantity of pig's liver and some pig's blood.

Sausages are far more conspicuous on the Continent than in England, although *said to be* "equal in nutritive value to three times their weight in fresh meat." See also *German*, *Cambridge* (p. 164), and *Westphalian Sausages*.

In Minorca, pork sausages constitute the ordinary food of the majority of the population, and are made in winter to last the year round; indeed, they are not considered fit for use till kept six months.

French Sausages, like German and Austrian, are mostly made from the flesh of horses, asses, or mules, and often contain about 15 per cent. of starch. When kept a short time they acquire a sharp, acid taste, and are then termed "*piqué*," when still older, *echauffé*.

Saucisses (longues or plates) consist of a skin of pig's intestine filled with raw or smoked minced flesh (usually pork) and seasoned with salt, pepper, pimento, etc.

Saucissons. — A term for larger sausages, and usually more highly seasoned, such as "*Saucissons de Lyons*," "*S. cru*," etc.

Cervelas are large, short sausages, containing salted and spiced flesh. Analogous to the English saveloys.

English Sausages are usually named after the meat they contain. The best are prepared from raw meat with spices and sometimes more or less of bread crumbs. The cheaper kinds often contain more of crumb than meat.

It has been pertinently asked why should not grocers and others whose shops are in thickly peopled neighbourhoods take to sausage-making as an additional line, and so reap a profit unknown to those who simply buy and retail? As prepared in this country for immediate use, they usually consist of fresh meats such as pork, beef, or veal, finely chopped or minced, and seasoned with sage, pepper, salt, biscuit powder, etc., and are filled into very thin skins.

Lean pork 15lbs., fat pork, cut up very small, 6lbs., biscuit powder 1lb., sausage meal 2lbs., seasoning 12 ozs., and of food preservative (a dry antiseptic) 2 ozs., with a tablespoonful of rose-pink colour, made into a liquid. The meat is then stuffed into *sausage* "*casings*" or *skins*, previously cleaned, and prepared from the entrails of the ox, sheep, pig, or other small animals; but lamb intestines, though sometimes used, are not considered very good.

Oxford and Cambridge Sausages are made up and sold in "links," but *Epping* in bunches.

The intestines of the larger animals are, as already explained, generally used in making the large dried Bolognas, p. 124, or Mortadellas, p. 605, polonies, saveloys, as well as Arles, Loraine, and Lyons sausages, the latter being also encased in an outer wrapper.

Chicken, *Ham*, and *Tongue Sausages* are usually lined with "weasands" (the lining of the throat of cows), but the "chicken" used is suspected to be mostly pork, and the name merely used for its more alluring sound.

Sausages made from fresh meat will not, of course, keep good many days, but those from preserved meats and filled into thick skins and dried, will keep a long time; and, as a rule, the drier sausages are, the better they will keep. When manufactured on an extensive scale, "*sausage machines*" are employed both for mincing and filling, and although there are now some first-class makers in this country, notably Parnall & Sons, of Narrow Wine Street, Bristol, much of the cheap machinery, boilers, etc., and even the colouring matter (camwood dye, Bismarck brown, etc.), in which some kinds of sausages are dipped for a second in order to turn them a bright orange colour, are imported from the United States, and chiefly from Chicago.

Some sausage-makers, to regain a fresh appearance for old and unsound meat, colour their products with preparations of cochineal, but it is easily detected, and extracted by finely mincing a sample,

and boiling it in a mixture of equal parts of glycerine and water. If cochineal be present, the solvent takes a decidedly red colour. When cold it may be filtered, and if even a little colouring be present there will be traces in proportion. Some employ carmine, others the aniline dye known as *phosphine*, in combination with boric acid 1 part and ground rice 3 parts, adding sufficient of the colouring to impart the desired shade. The same colour in solution is also often used for the skins. Other less scrupulous makers employ borax, or sulphate of lime, as a preservative. There is really no fixed standard as to what sausages should contain. Some consist of seven-tenths bread, two-tenths fat, and only one-tenth actual flesh meat.

Sausage Rolls sometimes contain no meat at all, but bread crumbs coloured with red ochre. An objection to bread and bread crumb is that it soon turns sour, therefore most manufacturers now use "biscuit powder." Besides, the question as to what kind of preparation can be regarded as genuine sausage was under the consideration of the Directors of the British Analytical Control in the summer of 1899, and they were of opinion that the unacknowledged admixture of bread or farina, in any quantity, constituted adulteration.

The term "sausage," without any qualifying designation, was held to mean a preparation consisting of meat and spice only; therefore, sausages which consist merely of bread and fat, coloured with a ferruginous earth or an aniline dye or a mixture of bread and fat, with a small amount of meat, were considered to be fraudulent adulterations.

There are, of course, numerous recipes for seasonings, indeed, it is to the seasoning each owes its distinction, but they mostly consist of salt, ground white pepper or pepper husks, nutmeg, mace, with a little ginger, cayenne, etc.

Perfect cleanliness is a primary essential, and the next is a good and suitable-sized machine.

The cheaper sausages and small Germans are said to be not unfrequently made wholly or partly with horse-flesh, which is indeed firmer, and really keeps better.

The Anglo-German Sausage trade commences about Easter, while that for English falls away about that time. Artemus Ward once said "he liked to eat hash because he knew what he was eating." Probably he would say the same about sausages.

How to cook sausages.—Cut the sausages separate, place pan over clear fire or hot plate, put in 1 oz. lard or dripping to 1lb. sausages. Let fat boil, then fry seven minutes. Turn with spoon to keep gravy in, then move them to side of pan, dust a little flour into the fat, stir round, roll sausages in it, and brown them off. Caution.—Never prick them with a fork.

When going bad they have a sour taste, and assume a bluish or greenish tint.

Special Firms. — Hillier's Bacon Curing Co., Ltd., Newmarket, near Stroud; Tebbutt & Co., Melton Mowbray; and Trantoms, Ltd., Liverpool.

Sauterne Wines.—These are sweet, white wines, produced in the Bordeaux district, and particularly around the village of Sauternes, whence they derive their name.

Sauterne, Barsac, Vin de Grace, Château Sudurant, La Tour Blanche, and the noted Château d'Yquem, Bommes, etc., which are from the "Blanches," or dry white wine district of France, are all classed as Sauternes. They usually contain about 5 per cent of alcohol.

As a rule, the *white* wines of the Bordeaux district are finer flavoured and have a more delicate perfume than the *red* wines, and gradually lose their sweetness with age.

Saveloys.—F. *Andouilles.*

These short, thick sausages originally were a compound in which pigs' brains were the chief ingredient, and required a thorough cooking, which the pork butchers professed to impart.

The word Saveloy is a corruption of the French word *Cervelet* (brain), but the name *Saveloy* is now applied to any highly seasoned and dried pork sausage,

sufficiently cooked when bought to keep good a considerable time. They are commonly made from salt pork, lights, rinds, pigs' cheeks, thoroughly cured and made red with saltpetre. The meat is brought nearly to the boil, and afterwards chopped fine, with about half its weight of bread, or powdered biscuits, and seasoned with ½ oz. of the following mixture to each pound of saveloy:—4lbs. pepper, 2 ozs. cayenne, and 2 ozs. cloves, all ground, with 8lbs. salt. Some add 4 to 6 ozs. sage.

They are, however, made differently in various places, and are usually smoked, and the *Andouilles de Vire* owe their renown to their fine flavour and to the slow smoking to which they are subjected.

Apply to Hillier's Bacon Curing Co., Ltd., Newmarket, near Stroud.

Savonettes. —See *Soap Balls.*

Savoury. —F. *Sarriette.*

An aromatic plant or herb commonly used as a condiment for flavouring beans, sour-crout, mustards, pickles, etc. It grows in much the same way as marjoram, and requires a warm temperature.

Savoury Ducks.—See *Spice Balls.*

Savoury Spice.—A good quality of savoury is made of equal quantities of ground cloves, nutmegs, mace, pepper, and salt. Should be bought by sample, as there are many qualities.

Gardner's patent "Rapid" Sifter and Mixer, freely used for above. Prices, from 50/- to £100. Catalogues from Wm. Gardner & Sons, engineers, Gloucester.

Savoury Spice Essence.—(See also *Soup Spice*, etc.)—4 ozs. ground black pepper, 3 dr. powdered turmeric, 1½ dr. ground coriander seeds, 1½ fl. dr. oil of pimento, ½ dr. each oils of nutmeg, cloves, cassia, and caraway, 1 pint rectified spirit. Digest with agitation 14 days.

Savoy Cabbages. —See *Cabbages.*

Saxony Blue or **Liquid Blue.**—A solution of indigo blue as used in dyeing. It is prepared by dissolving indigo in concentrated sulphuric acid. It is a very bright colour, but not so *fast* on exposure to the light or to the action of soap.

Scallions. — A collective name commonly applied to cibols, Welsh onions, or the hollow Leeks of Wales, shalots, or other species of the onion tribe which have refused to bulb, but have formed lengthened necks and strong blades.

Scallops. —G. *Kamm-muschel.*

A kind of shell-fish or testaceous mollusc of the genus *Pecten.* The shell is bivalvular, the hinge toothless, having a small ovated hollow, from which alternate *ribs* and furrows usually run diverging to the margin of the shell. There are some species used for food, and often substituted for oysters. The shells abound on the coast of Palestine, and were formerly worn by pilgrims as a mark that they had been to the Holy Land. The name Scallop is often given to oysters prepared with bread crumbs and baked in a shell or tin.

Scarlet Runners or **String Beans** (*Phaseolus multiflorus*) is a variety of the Kidney or "*Feves d'Espagne*," and is well known for its climbing capacity.

Generally sown early in May to July, in drills of loamy soil, 3 to 4 feet apart, 2in. deep, and 4 to 6 in. from bean to bean. (See *French Beans.*)

The green pods are boiled and eaten when young and tender. Sometimes they are gathered and cut in, say, three slices, and put in layers in jars or casks —first a layer of beans and then a layer of salt—they may be preserved for winter and spring, when vegetables are very scarce; no water need be added, as they make their own brine. A few hours' soaking is necessary before cooking these, to get the salt out.

The white seeds, when fully grown and ripe, are generally known as *Haricot beans* (which see).

Scented Soaps. —See *Toilet Soaps.*

Scented Teas. — (See also *Pekoes, Caper*, etc.)—Great Britain is the only

country using them, and they used to be very popular, but now very little inquired for. Only some five million pounds a year are imported, and the demand for them seems steadily declining. Scented Capers were formerly taken by a number of the retailers in various parts of the country, but they are now used chiefly by the large blending firms with low-priced Indian and Ceylon teas. They are poor stuff as a rule, with nothing to recommend them except, like the dude, their perfume. The importation of Scented Orange Pekoes is now practically *nil*.

Scented teas are sometimes used very unwisely. For ordinary purposes one part in twelve, or even one in sixteen, is quite sufficient to give the blend a distinctive flavour. Fine Cyelon, or Formosa oolong, or Foochow pekoe are the most desirable kinds for the purpose.

Schabzieger Cheese (*Sap Sago*).—G. *Zieger Käse*.

A noted Swiss make, Anglicised as *Sap Sago*. It is very firm, hard, of greenish colour, also exceedingly strong both in smell and taste, and for that reason considered by some a delicacy, but by others a thing to be avoided. It appears to owe its chief flavour to *Coumarin*, as derived from the blue melilot flowers which are cut up and mixed with this cheese. (See *Swiss Cheese*.)

The cheese keeps good one year, and sometimes longer, if a little care is taken to keep it cool and not expose it to insects, light, or draught. It is a good plan to wrap it in tin foil when exposed for sale, but the best plan is to place it under a glass cover. If neither of these is done, it will crack and be worthless in a short time.

Schapekase Cheese. — A Dutch variety made from *ewes'* milk, and more highly esteemed than any other in Holland.

Schiedam.—See *Hollands Gin*.

Schnapps.—The German term for a dram, snack, or "nip" of strong liquor; spirituous liquor of any kind, especially "Hollands" gin.

It is very popular with the soldiery and lower classes, but is usually of a vile quality made from potato spirit.

Schultze's Powder.—A new sporting powder for guns, in which nitrated cellulose is the principal constituent.

Schwalbacher Weinbrunnen.—A German mineral water, with ferruginous properties; useful in cases of debility, and for the improvement of impoverished blood; it contains bicarbonate of iron, magnesia, soda, lime, etc.

Schwarzenberg Cheese.—A Continental make, consisting of water, 59 per cent.; fatty matter, 11; caseine, 24; and salts, 6.

Scones. — Soft triangular cakes usually made of flour in England. They are made very like tea cakes, or light buns, raised with bicarbonate soda or with yeast, and are plain or rich according to the amount of butter used. In Scotland they are often made of barley meal, and "fired" on a griddle.

For *Cream Scones:* 2lbs. flour, ¼lb. sugar, 1 pint of sour milk, ¼lb. salt butter, and 2 oz. baking powder.

For *Scotch Soda Scones:* No sugar, but more butter is used.

For *Helensburgh Scones:* 2lbs. flour, ½lb. butter, ¼lb. sugar, pint sour milk, and a little salt.

Scotch Barley.—F. *Orge mondé*. (See *Pearl Barley*.)

Scotch Beef Ham. —See *Hung Beef*.

Scotch Bonnets. — A name for Champignons, or small mushrooms; also for a variety of capsicum.

Scotch Brose.—A Scotch brose is a time-honoured dish. It calls for three cupfuls of the liquor in which a leg of mutton or a piece of beef has been boiled, or the same quantity of stock, a cupful of oatmeal or peameal (*brose meal*), and an even teaspoonful of salt, in case the stock was not salted. Let the oatmeal cook steadily in an earthen pipkin in the broth for one hour, and

serve. Oatmeal, when served in this way for breakfast, may be cooked the night before and steamed in the morning. Almost any grain, such as rice, hominy, peameal, or barley, cooked in stock in this manner, is known as "Brose," especially when it is served with a dish of meat, and not as a breakfast porridge with milk.

Scouring Balls.—These are usually made of a mixture like the following:—Say, 35lbs. white curd soap, 6½lbs. pearlash, and 3¼lbs. oil of juniper. The soap and pearlash are first dissolved in hot water, the juniper oil is next stirred in, and the mixture when cool is moulded into balls.

Scouring Bricks.—See *Bath Bricks*.

Screening or **Hinder Ends.** — Names in some districts for the small, shrivelled, and inferior grain that is separated by the screens and fans. Mostly used in foods for poultry or other animals.

Scribe.— The name of the tool used for "scribing," cutting, engraving, or carving marks, weights, numbers, etc., on wooden packages, tea chests, etc.

Scubac.— A spirituous liquor, originally made in Holland, and with a base of saffron.

Scum-boilers.—A low class of sugar refiners, who buy the scum and other impurities from the larger refiners, and make it into a sort of molasses, and which is sometimes used for the illicit distillation of spirits, adulterating porter, etc.

Sea or **Ship Biscuits.**—F. *Biscuits de mer*.

These hard, coarse, and dry biscuits represent the *Panis nauticus* of the Romans, and are merely unleavened bread, specially prepared for use on ship-board. They are composed of flour and water only, with a little salt, slowly baked, and run about six to the pound.

They are chiefly made at the Government Victualling Yards, and at a cost of only about 5d. per cwt. over the cost of the materials.

There are private firms in some of the seaports who also make them, but they are not usually sold by the *fancy-biscuit* manufacturers.

Sea biscuits have long been popular from their power of resisting the influence of the moisture contained in the air. Stored in a dry, warm place, they become thoroughly cured, and will keep good for many years if kept from the air.

Sea Kale. — F. *Chou de Mer*; G. *Strandkohl*; Lat. *Cramoe maritima*.

This useful winter vegetable is another British Crucifer nearly related to asparagus. It has been cultivated for about two centuries, but has been very little altered thereby, and derives its name from growing on certain seashores. It is easily cultivated from seeds or root cuttings. Its stems and leaf stalks are blanched by being earthed up, and when grown to perfection and well boiled they form a delicate and even delicious vegetable. In season February to June.

Sea Moss Farine.—A fancy name for a kind of American custard powder, which had a short and merry sale about 1870. It consisted of seaweed, dried and ground into a fine powder, agreeably flavoured and tinted.

Sea Peas or **Beach Peas.**— The seeds of the *Lathyrus maritimus*, a plant which grows wild on some of our sea coasts. They have a very unpleasant taste, but have often been eaten in times of scarcity.

Sea or **Bay Salt.**—The salt which is obtained from sea water by evaporation. In its impure state it contains, among other substances, chloride of magnesium, which is easily removed. Sea salt ordinarily contains only about 89 per cent. of pure chloride of sodium, which, when dissolved, or washed away by fresh water, leaves the other substances devoid of salty taste, and this is therefore supposed to be the kind of "salt which has lost its savour," mentioned by St. Matthew.

Sea salt is largely used, in a somewhat coarse condition, with common water,

for domestic baths, and is usually sold in small bags.

Sealed Tea.—A coarse kind, imported into Kiachta from China, and so-called from being pressed into solid, sealed packages of about 3lbs. each, so firmly compacted together that nothing less than a hammer and chisel will break it. The leaves are old, and almost tough as leather, and intermixed with twigs and stalks. Some fatty substance is also mixed with it to make it cohere. (See *Brick Tea.*)

Sealing or **Spanish Wax.**—Da. *Sejglak;* Du. *Crieflac;* F. *Cire à cacheter;* G. *Siegellack;* It. *Cera lacca;* Pol. *Lac;* Port. and Sp. *Lacre;* Rus. *Surgutsch.*

A compound of shellac and resin, melted in turpentine, and coloured with vermilion, ivory, or lampblack, and various other colours as required:—For *yellow*, massicot chrome, or other yellow pigment; for *purple*, a mixture of vermilion and smalt; for *blue*, verditer or smalt, or a mixture of the two; *gold-speckled* is made by adding gold-coloured mica spangles, talc, or other materials.

A good sealing wax may be made from six parts of powdered resin, four of red lead, two of vermilion, and two parts of powdered shellac.

The ingredients are carefully melted together in an open copper pan over a slow fire, and afterwards formed into sticks with a piece of polished wood by rolling on a slate or marble slab, or else run into moulds.

Sealing wax is often scented with a little balsam of Peru, and sometimes a little camphor is added to make it burn better. For the finer kinds Venice turpentine is used instead of resin.

Sealing wax was formerly much used for sealing legal instruments, letters, etc., but letters sealed with it are apt to stick together in warm countries. The wax made in England was at one time known as Dutch wax, and was all stamped with a Dutch stamp.

Seal-Oil.—Made from the fluid fat, or blubber, obtained from a species of seal, a marine carnivorous mammal. They are mostly caught on the coasts of Spitzbergen, Labrador, and Newfoundland, in the spring of the year, when they are fattest, a full-grown seal yielding 8 to 12 gallons of oil, and a small one 4 to 5 gallons. The *bottle-nosed* seal is usually so excessively fat as to resemble a skin of oil, the tremulous nature of the blubber being plainly perceivable beneath the skin. A single animal of this kind has been known to yield a butt of oil.

Like other fish oils, owing to the mode of extraction, it is necessarily impure, and requires to be refined or purified, but when this is done before putrefaction has set in it is beautifully transparent and almost inodorous. It is considered much superior to whale oil, and constitutes a very valuable article of commerce.

Apply to C. Windschuegl, 1 Leadenhall, Street, London, E.C.

Seaweeds used as Food.—Sea weeds belong to the lowest class of flowerless plants; they have no seeds, but grow from spores as do lichens.

They are divided into three great classes—the red, the brown, and the green. The most highly organised are the red, and the simplest are the green, but the brown are the commonest, and attain the largest size on our shores.

The Chinese and Japanese utilise them as human food more than any other people. They cultivate several varieties, which they cut up in fine shreds, like tobacco, and use them in soups and made dishes. In fact, seaweed is one of the regular articles of trade mentioned in the Chinese Yellow Books.

Britishers always enjoy "a sniff of the briny," but they don't seem to care about eating marine vegetables, although those who begin often become very fond of them. In Wales, seaweed is often fried in oil for human food, and in London, to some extent, boiled as "greens." The inhabitants of the sea-coast, particularly in the Orkneys and Ireland and other isolated localities, where the people are often on the brink of starvation, also resort to seaweed.

Several kinds are undoubtedly valuable

esculents, and remarkable for the large quantity of gelatine matter which they contain.

The sweetest species is the *Laminaria saccharina*, found on sandy or gravelly shores, and is usually covered, when dry, with an efflorescence of mannite to the amount of about 7½ per cent. There are no poisonous species, and, although they contain a large proportion of salts, these are easily removed if desired.

The principal sorts of seaweeds, mosses, and lichens used as food are known as Agar-agar, Bengal Moss, Balderlochs, Carrageen, Ceylon Moss, Dulse, Fucus, Irish Moss, Jaffna Moss, Iceland Moss, Japanese Isinglass, Laver, or Sloke, Murlins, Popweed, Rockweed, Tangle, Varec, Vraic, etc., and are more fully described under their own headings.

The following table shows the value of a few of them in making jelly. The melting point of the jelly is also appended. 1,000 parts of water required of:—

	Parts.	Melting proportion.	Point Fahr.
Gelose	4	1	90°
Japanese Isinglass	8	2	90
Carrageen	30	75	80
Isinglass	32	8	70
Gelatine	32	8	60
Carragheenin ...	36	9	70
Agar-Agar	60	15	90

Japanese Isinglass jelly keeps well, but the others soon get mouldy unless preserved. The kind known as Sea-wand, Sea-girdles, or Sea-ware (*Laminaria digitata*) is considered very nutritious. From one variety, *Fucus vesiculosis*, or Lady's wreck, an extract known as "Anti-Fat," is made for the use of ladies or others desirous of reducing their size. Another pungent and nutritious variety, the *Laurencia pinnatifida*, called "*Pepper* dulse," is often used as a condiment when other sea-weeds are eaten. *Tripe-de-Roche*, a lichen identified as *Gyrophora cylindrica*, has occasionally supported life among famishing travellers in the desolate northern wastes of Arctic America. Gigantic species of sea-weed, with stems a foot in diameter, abound off the Falkland Islands, and along the Straits of Magellan, making it difficult for a boat to approach; one species, the *macrocystis*, is said to grow to a length of 500 yards about Stanley harbour; but none of these giant algae are edible.

Seed Business. — In many country towns and villages a lucrative business is done every spring, by grocers, chemists, etc., who enjoy the confidence of small farmers, cottagers, etc., in seeds, sets, and plants.

The general agricultural seed trade is, however, rather heavy, and requires considerable capital.

The first seeds required are spring tares and field peas of the varieties most in demand in each particular locality, and these may easily be learnt from the fruit and potato salesmen of the neighbourhood. An apprentice also, if a farmer's son, is very useful in the seed business.

Next required are clovers, red, white, and alsyke, perennial, and "French" Italian rye-grass, and mangel-wurzel seed of the sort most favoured in each district.

Grass and clover seeds, such as milfoil (Yarrow), hair-grass, sweet vernal grass, oat-grass, meadow foxtail, crested dogs-tail, fescues, bent-grass, cocks-foot, meadow-grass, canary-grass, timothy-grass, alsyke, trefoil, sainfoin, lucerne, etc., are all imported largely from Germany. In Darmstadt immense quantities are cultivated every year, and sent to all parts of the world.

Potatoes are also a necessary addition to the business, especially for gardeners and cottagers, who constantly require fresh varieties.

Spring, of course, is the busiest season, and towards the close of the year business in seeds shrinks into a very narrow compass.

The influence of the size and weight of seeds on the growth of the crop has often been argued. Some say it has no material effect on the product. The majority take an opposite view, and seem to have proved their claims by well-conducted experiments.

Turnips and many other young plants raised from seed are apt to be injured, and often completely destroyed,

The Quantity of Seed Required to an Acre and Ordinary Yield.

Designation.	Seed per Acre.	Yield per Acre.
Wheat	1½ to 2 bushels	28 to 30 bushels
Barley	2½ to 3 „	36 to 50 „
Oats	3 to 5 „	44 to 56 „
Rye	2 to 3 „	30 to 45 „
Buckwheat	1 to 2 „	30 to 40 „
Vetches	2½ to 3 „	—
Millet	1 to 1½ „	—
Corn	½ to 1 „	—
Beans } according to variety	2 to 4 „	25 to 40 „
Peas } according to variety	2 to 3½ „	33 „
Hemp	1 to 1½ „	—
Flax	½ to 2 „	—
Rice	2 to 2½ „	—
Broom Corn	1 to 1½ „	—
Potatoes	5 to 10 „	3 to 12 tons
Timothy	12 to 24 quarts	—
Mustard	20 lbs.	—
Herd Grass	12 to 16 quarts	—
Turnips	3 to 4 lbs.	10 to 30 „
Mangolds	6 to 7 „	15 to 40 „
Red Clover	10 to 16 „	—
White Clover	3 to 4 „	—
Blue Grass	10 to 15 „	—
Orchard Grass	20 to 30 „	—
Carrots	6 to 9 „	10 to 20 „
Parsnips	6 to 8 „	8 to 14 „

Table Showing the Quantity of Garden Seed Required to Plant a Given Space.

Designation.	Space and Quantity of Seeds.
Asparagus	1 oz. produces 1,000 plants, require bed 12 feet square.
„ Roots	1,000 plants a bed 4 feet wide, 225 feet long.
English Dwarf Beans	1 quart plants from 100 to 150 feet of row.
French „ „	1 „ „ 250 or 350 of row.
Beans, pole, large	1 „ „ 100 hills.
„ „ small	1 „ „ 300 hills or 250 feet of row.
Beets	10 lbs. to an acre; 1 oz. plants 150 feet of row.
Broccoli and Kale	1 oz. plants 2 500 plants, and requires 40 square feet.
Cabbage	Early sorts, same as broccoli, requires 60 square feet.
Cauliflower	The same as cabbage.
Carrot	1 oz. to row of 150 feet.
Celery	1 „ gives 7,000 plants, and requires 8 sqnare feet.
Cucumber	1 „ for 150 hills.
Cress	1 „ sows a bed 16 feet square.
Egg Plant	1 „ gives 2,000 plants.
Endive	1 „ „ 3,000 plants, and requires 80 feet.
Leek	1 „ „ 2,000 „ „ „ 60 „
Lettuce	1 „ „ 7,000 „ „ „ 120 „
Melon	1 „ for 120 hills.
Nasturtium	1 „ sows 25 feet of row.
Onion	1 „ „ 200 „ „
Okra	1 „ „ 200 „ „
Parsley	1 „ „ 200 „ „
Parsnip	1 „ „ 250 „ „
Peppers	1 „ gives 25,000 plants.
Peas	1 quart sows 120 feet of row.
Pumpkin	1 oz. to 50 hills.
Radish	1 „ „ 100 feet.
Salsify	1 „ „ 150 feet of row.
Spinach	1 „ „ 200 „ „
Squash	1 „ „ 75 hills.
Tomato	1 „ gives 25,000 plants requiring bed of 80 feet.
Turnip	1 „ to 2,000 feet.
Water Melon	1 „ „ 50 hills

TABLE SHOWING THE AVERAGE NUMBER OF SEEDS IN ONE POUND, AND WEIGHT PER BUSHEL.

NAME.	NUMBER OF SEEDS PER LB.	NO. OF LBS. PER BUSHEL.
Wheat	10,500	58 to 64
Barley	15,400	48 „ 56
Oats	20,000	38 „ 42
Rye	23,000	56 „ 60
Vetches	8,300	60 „ 63
Lentils	8,200	58 „ 60
Beans	600 to 1,300	60 „ 65
Peas	1,800 „ 2,000	60 „ 65
Flax Seed	108,000	50 „ 60
Turnip Seed	155,000	50 „ 56
Rape Seed	118,000	50 „ 56
Mustard (white)	75,000	57
Cabbage Seed	128,000	52
Mangel-wurzel	24,600	20 to 24
Parsnip Seed	97,000	14
Carrot Seed	257,000	9
Lucerne Seed	205,000	58 to 60
Clover (red)	249,600	60 „ 63
„ (white)	686,000	59 „ 62
Rye Grass (perennial)	334,000	20 „ 28
„ (Italian)	272,000	13 „ 18
Sweet Vernal Grass	923,000	8

by "the fly," but this may be easily prevented by soaking the seed about 12 hours in turpentine before sowing. (See *Turnips*.)

Samples and prices of seeds may easily be obtained from the larger firms, and many orders may be taken in advance, so as to avoid over-stocking.

Apply to Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool.

Seeded Raisins.—See *Raisins*.

Segars.—See *Cigars*.

Seidlitz Powders.—These saline purgatives first came into vogue about a century ago, and take their name from a village in Bohemia, where they were originally made. The official name for them now is "*Effervescent Tartarated Soda Powder*." They must be neither too strong nor too weak. Retailers are often fined for selling them not of the precise quality and substance laid down in the British Pharmacopœia, which says the blue paper should contain 120 grains of tartrate of soda (Rochelle salt), with 40 grains of bi-carbonate of soda, mixed together; and the white paper should contain 38 grains of tartaric acid. When used, the powder in the blue paper is first dissolved in half a pint of cold or warm water, and the acid powder (in the white paper) is then added. The whole should be at once stirred up and drunk off. The best time for taking these powders is in the morning, fasting.

Both powders being *white*, the opportunities for adulteration are numerous, but, as seidlitz powders are usually put up by manufacturers on a large scale, the retailer should demand a guarantee of above proportions. The chief things to be guarded against are traces of lead—a serious one—and excess of moisture. If the white paper be stained, it betrays the presence of a heavy metal, such as iron or lead.

Gardner's patent "Rapid" Sifter and Mixer, freely used for above. Prices from 50/- to £100. Catalogues from Wm. Gardner & Sons, Engineers, Gloucester.

Seidlitz Water.—G. *Sedlitz Wasser*. So-called after the mineral spring situated at Sedlitz, in Nassau.

Sedlitz is, however, a wretched-looking place, hardly meriting the name of

a village, and the wells whence the waters are supposed to be derived are really a few shallow circular pits, whose contents seldom find their way to England. In 1,000 parts of this "natural spring water" there are about 169 parts of magnesium sulphate, 33 of sodium, 9 potassium, 7 calcium, and 17 of calcium bi-carbonate. So instead of that yellow, oily-looking fluid, with its nauseous and intensely bitter taste, we have a far more agreeable and cooling drink in the imitation seidlitz water made by strongly aerating a solution of 2 drs. of Epsom salts in a pint of water. Sometimes 4, 6, or 8 drs. of the salts are mixed in a pint of water.

Seidlitz water (Lat. *Aqua sedlicensis*) is, of course, a medicinal water, and not fitted for everyday use as a beverage.

Self-raising Flour. — First introduced about 1870. Often prepared by merely adding baking powder to ordinary flour. Many of them contain only a very small proportion of tartaric acid, and too much bi-carbonate of soda. The acids and carbonates should be mixed in the proportions required to neutralise each other.

By mixing 2 ozs. of tartaric acid, 4 ozs. of bi-carbonate of soda, and 1 oz. of salt with every 14lbs. of well-dried flour of a good quality, a superior self-raising flour is easily produced. 3 ozs. of cream of tartar may be used instead of the tartaric acid, if more convenient. A little ground rice may also be added to advantage; or the following proportions, viz.:—2 parts of tartaric acid, 4 of cream of tartar, 5 of carbonate of soda, and 6 of common salt, with 560 parts of flour.

The chemicals should be carefully powdered and sifted before adding to the flour, and if the whole be well sifted afterwards, so much the better. Self-raising flour is, in fact, best if freshly mixed as required—say, once a week—as the moisture in the flour is apt to spoil the acid. It should, of course, be kept perfectly dry, and not exposed to a humid atmosphere.

Much depends on mixing the materials, and this has been explained under "*Baking Powders.*"

Gardner's patent "Rapid" Sifter and Mixer, freely used for above. Prices from 50/- to £100. Catalogues from Wm. Gardner & Sons, Engineers, Gloucester.

Those who pack and sell their own mixtures should give a few recipes outside the bags showing how bread, cakes, pies, biscuits, buns, and scones may be made. Some of the lower qualities have been found to contain alum, and others "superphosphate" of calcium instead of tartaric acid; but both these are objectionable ingredients. White maize flour also is frequently added, but whether this is really an adulteration seems an open question. Self-raising Flours being in this respect on a par with Baking Powders, there is no legal definition or standard so long as there is nothing injurious in them.

One of the best we have met with is "RISO" (GOLD MEDAL) SELF-RAISING FLOUR.

For quality and purity, "Riso" Pastry Flour is everywhere recommended. It is produced from the finest wheats, and warranted free from maize and all injurious chemicals. It makes splendid pastry, very light, and of good colour. These words of praise are not our own, but gathered from the following authorities, which have from time to time reported on "Riso," namely:—The *Lancet*, the *Edinburgh Medical Journal*, the *Medical Press*, Granville H. Sharpe, F.G.S. (late Principal of the Liverpool College of Chemistry), Dr. Goodfellow, Ph.D., F.R.M.S., and Official Analyst at the Grocers', Confectioners', and Brewers' Exhibition, London, the *Grocer*, the *Grocers' Monthly*, *Grocery*, etc., etc.

"Riso" is put up in 3d., 6d., and 1/- packets. It sells well, and the quality is always the same. Retail agents wanted in every town and village. Apply to the "Riso" Self-raising Flour Company, Alun Steam Flour Mills, Mold, North Wales; or to their Wholesale Agents, David Jones & Co., Redcross Street, Liverpool.

Selters or Seltzer Water.—See also *Mineral Waters.*)—Natural Seltzer water (*Aqua Selterana*) is a limpid, transparent, wholesome, and pleasant mineral water. It is saline and slightly alkaline, containing sodium and calcium chlorides and magnesium and sodium bi-carbonates, and is obtained from a celebrated spring at Niederselters, in the Duchy of Nassau, and exported in brown stone bottles.

It is drunk either as an after-dinner table beverage by itself, or mixed with wine, champagne, brandy, whisky, milk, etc., and is often prescribed with success as an aperient and diuretic, also for indigestion.

But many so-called Selters or Seltzer waters are manufactured artificially, and they have really become nondescript beverages. People who drink them no doubt imagine they are getting something very special; but what they get, or what they expect to get, is very uncertain.

The word "Selters" is probably a corruption of Seltz, Niederselters, or Seidlitz; but the concoctions sold under these names vary more with regard to composition than any other beverages of their class. They all, however, seem to be attempts to reproduce the natural spring water above named.

Of the three springs—situated respectively at Niederselters, Okarben, and Seidlitz—only the first yields a water suitable for everyday drinking. The Okarben water (often also called *Selzerwasser*) is obnoxious from excess of lime salt, and is not fitted for frequent use, and the Seidlitz still less so. Hence the modern term "Seltzer water" practically affords no certain indication or proof as to which (if any) of these three spring waters has been imitated.

On the Continent the "Selters" sold by reliable makers are an exact reproduction of the Nassau waters, and are regulated by analyses; but inferior makes abound there as well as here.

One imitation is made by filling a stone Seltzer bottle with water, 2 drachms of carbonate soda, and 2 drachms of citric acid in crystals, and corking the bottle immediately. Another: Bicarb. soda, 5½ ozs.; carb. magnesia, 7 dr.; marble dust, ½ oz.; muriatic acid c.p., 5¾ ozs.; water, 10 gallons. Add the acid to ½ gallon of water; dissolve the marble in the mixture, then add the magnesia, and (after one hour) the soda; add the whole to the rest of the water, and charge with gas.

To obtain the genuine, "Natural Seltzer water" should be asked for.

The spring was discovered in 1525, and is now the property of the Duke of Nassau, who, in fact, derives his chief income from it. It is only bottled for export between 1 o'clock and 7, but goes to all parts of the world. It is the ordinary beverage of the local inhabitants, who are allowed free access to it for one hour at noon for getting their supplies, but for home use only.

Semola. — An Italian name for bran, but often erroneously applied, by grocers and others who ought to know better, to Semolina.

Semolina. —F. *Semoule, Gruau.*

This preparation (sometimes spelt *Semolino*) is also known as Manna Croup, Grits, Soojee, etc.

It consists of small round or oval particles of grain, such as hard wheats, rice, etc., but more particularly the red *grano duro* (wheat) of Russia and Italy, and is made by grinding the grain roughly, instead of reducing it to a fine powder. The granules produced are of various sizes, and these are separated by sieves into finer and coarser qualities. In France the large hard grains which collect in the furrows of the millstones, or are retained in the meshes of the bolting machine after the finer flour has been passed through the ordinary corn mill, are sold as semolina.

Soujee, Sooje, or *Mush,* are American names for similar articles, prepared chiefly from Indian corn (maize), and are very popular at the breakfast table. The name Semolina is also applied to potato flour when in granular form.

Semoletta is an Italian name for the finest quality of pearled wheat, and is

largely used in making Macaroni, and other pastes in both Naples and France.

Semolinas are also prepared for puddings, gruels, etc., or used for thickening soups, and form very nourishing and easily digested foods.

One very cheap and palatable dish of *Semoule de pâte* is thus made:—Into a small quantity of boiling water over the fire, and from one hand sprinkle in the semolina steadily, while with the other hand keep stirring it to prevent its forming into lumps, just as in making melted butter or hasty pudding. It should be boiled one or two minutes to thicken it, so that when it is poured out it does not run. A little sugar, with wine or diluted spirit, is added on the plate as flavouring, and it is then eaten with bread and butter—first a spoonful of semolina, and then a bite of bread and butter.

Fine semolina may generally be had at about 10/- per cwt.

Apply to Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool.

Semsem, Seed and Oil. — See *Sesame.*

Senna Leaves or **Cassia Leaves.** —Ar. *Suna;* Da. *Semsblade;* Du. *Senne;* F. *Sené;* Ger. *Sennablätter;* It. *Sena;* Pol. *Senes;* Port. *Sene;* Rus. *Senetnüe listü;* Sp. *Sen;* Sw. *Sennesblad.*

Senna or sena leaves are the dried leaflets of several species of *Cassia: C. acutifolia* (apex acute), *C. angustifolia, C. obovata, C. lenetiva,* and their varieties, but the two species first named are the chief.

In addition to oxalic, tartaric, and malic acids, senna contains a substance described as Cathartic acid, on which its valuable purgative properties chiefly depend.

Scarcely any drug is so much adulterated as senna by the admixture of inferior leaves, such as *C. obovata, C. elongata,* and especially by the leaves, flowers, stalks, and pods of the *arghel* plant, which generally produce griping. Therefore, all bales of senna leaves should be carefully examined and picked before passing them into actual consumption.

The true senna leaves are distinctly ribbed, thin, and generally pointed.

The *Alexandrian,* or *Nubian, senna* (*C. acutifolia*), growing wild in Upper Egypt, Nubia, etc., is one of the officinal sennas. These leaves are of yellowish green colour, and the nerves are very conspicuous on the under side. They are of narrow, oblong shape and sharp-pointed, about ¼ inch broad, and generally ¾ inch long—never exceeding 1 inch—also very thin, brittle, and slightly curved, and are collected, picked from the stalks, and dried by the Arabs, both east and west of the River Nile, and then sold to the Egyptian traders.

A large amount of this species grows wild in the Middle and Upper Nile territories, and these are mostly collected by Bedouins between Suakim and Kassala, and exported *viâ* Alexandria or Red Sea ports.

Unfortunately, they are generally also mixed with other leaves, as above noted, and require very careful picking.

Tinnevelly (East Indian or Bombay) *Senna* is the dried leaflets of another variety of *C. angustifolia* (narrow-leafed), also an officinal species of superior quality. It is cultivated chiefly in India, although native of Arabia. These leaves are pale green, thin, and flexible, from 1 to 2 inches long, and nearly ½ inch broad. They are altogether stronger and less broken, and they have the fragrance of tea, but scarcely any flavour till decocted. They are seldom adulterated. The hairs on both the upper and lower surfaces of Alexandrian leaves are more numerous and straighter than on those of the Indian senna.

Arabian, Mocha, Aleppo, Italian, and *Senegal Sennas* are inferior kinds, growing wild in Syria, Egypt, and Senegambia, etc. They were formerly imported extensively from Bombay, but are now out of commerce except as adulterants.

American Senna is a herb (*C. marilandica*) growing 3 or 4 feet high, with yellow flowers, in the South-Eastern States, but is less active than the Oriental kinds.

A new variety of senna leaves is now produced from a small shrubby plant called *Cassia holosericca*, a native of Arabia. It grows about 18 inches high, and the leaves are smaller and more obtuse in form than the other more familiar sorts. They also possess a coat densely covered with short hairs, which easily distinguishes them.

Senna leaves, when chewed, have a peculiar nauseous flavour, and yield a dark brown infusion. Dose, 10 to 30 grains, either in powder or made into tea. A little ginger, caraway, or other aromatic flavouring may be added with advantage.

Senna should never be used when there is inflammation, or even much irritation of the bowels.

Importers.—Kimpton Brothers, 36 and 37 Mincing Lane, London, E.C.

Separated Milk.—(See also pp. 597, 290, 396, 474, and *Sterilised Milk.*)—Milk from which the cream has been taken by the now well-known "centrifugal-force" method.

Condensed separated milk has, of course, very small nutritive value, and its use may inflict great hardship upon poor people. Good new milk contains from 3·5 to 4 per cent. of fat, whereas separated milk contains only 1 per cent. of fat. Ten half-pound tins of separated milk would be required to yield the same amount of fat as one pint of new milk. Separated milk is now being largely used by biscuit manufacturers.

Retailers should remind ignorant mothers of these facts.

Septmoncel Cheese.—A kind very similar to Gex and Roquefort.

Sepawn or **Sepon.**—Maize meal boiled in water, and used as food in the North American States.

Sequah Oil.—(See also *Patent Medicines.*)—Usually oil of turpentine, ⅔; fish oil, ⅓; scented with a few drops of oil of camphor.

One sample analysed by Hofman & Robinson showed 33 per cent. of cod liver oil and 67 per cent. of turpentine, perfumed with oil of lavender. It sometimes has a sassafras odour.

In 1892 there were imported into Holland 40,000 bottles of the Sequah Oil, the declared value at the Custom House (*Chem. and Drug.*, V. xl., p. 687) being less than 1½d. per bottle, and the retail selling price 2/1 per bottle, or to "the poor" 1/-.

Sequah Prairie Flower.—A 2-oz. bottle contains: aloes, 105 grs.; carbonate of soda, 35 grs.; water, 735 grs., and a few drops of the tinctures of capsicum and myrrh.

Seron or **Seroon.**—An outer wrapping of raw hide, put on and sewed together while green. Used for packing drugs, herbs, roots, and other articles. "Seron" is also a trade name for an oblong package of *Maté*, or Paraguay tea, holding about 200 pounds.

Some "serons" are formed of pieces of wood, joined with slips of bamboo.

Service Berries.—The fruits of *Pyrus terminalis*, and known in some of the provinces as "*Chequers.*"

Sesame or **Semsem Oil** (pr. *ses'-a-me.*—See also *Gingelly Oil.*)—Also known as *Simsim*, *Oil of Sesamum*, *Oil of India*, and sometimes called *Benne Oil*, *Gingelly Oil*, or *Teel* or *Til Oil.*

The herb, indigenous to India, has been cultivated from the earliest times for the sake of its oily seeds, and was known by the Egyptians as "Semsent," the Arabic name being "Simsim," for the herb, and "Siritch," for the oil.

It is a bland, sweetish, pale-yellow, non-drying oil, expressed from the seed of *Sesamum*, or *Oily-Grain*, an annual plant, of which there are two varieties, viz., the white-seeded, known in India as "Suffed-Til," and the black-seeded, known as Kala-Til. The plant grows in several parts of India, Egypt, Africa, America, and in the West Indies, is often called *Banglo*, *Wanglo*, or *Oil plant.* It is in universal use throughout India in cooking and anointing.

This oil is remarkable for its keeping qualities, and will remain several years quite good, and free from rancid smell or taste. It is frequently used as a substitute for sweet oil in salads, and the

other general purposes of olive oil. The seeds themselves are in some countries pounded and put into soups or added to cakes, jams, etc. The fresh leaves of the plant, when broken and slightly bruised in cold water, form a mucilaginous drink, used as a domestic remedy in dysentery.

Both the white and the black seeded varieties are cultivated very extensively in China, and large quantities of seed are exported from Formosa to *Marseilles*, where the oil (itself often mixed with ground-nut oil) is largely used to adulterate olive oil. 9lbs. of seed yield about 2 qrts. of the oil. Large quantities of the seed come from the East Indies, Brazil, and Egypt.

The Chinese use Sesame to flavour wheat in cakes.

In Egypt the seeds are sown in June and harvested in autumn. The stems are pulled up bodily, and carefully conveyed, in an upright position, to suitable spots, where as soon as the capsules are dry they open in the sun, when shaking them suffices to dislodge the seed. (See *Gingelly Seeds*, p. 412.)

At Marseilles the Levant sesame is subjected to *three* pressings. First, the seed is thoroughly triturated to allow the oil to come away more readily under pressure. In the first pressing, from 30 to 32 per cent. of oil is obtained, and this brings a good price for table consumption. The seed is again thoroughly triturated, a little water being added, and a second quality of eating oil is expressed. The seed is then once more triturated, and from 2 to 4 per cent. of water added, after which it is heated to 70° or 80° C., and again pressed, yielding an inferior oil used by soapmakers.

The oil is thin and yellow, and, when purified, is a good illuminant. The residuum is made into oil-cake for cattle feeding.

Sesame is also widely cultivated in Syria, where, in preparing the oil, the grain is soaked in water for 24 hours, and then placed in an oblong pot, coated with cement, on which two men work a wooden hammer of 20lbs. weight. Efforts are not made to mash the kernels. The skins are separated in a tub of water, salted to a degree sufficient to float an egg. The bran sinks, while the kernels remain on the surface. The sesame seeds are now broiled in an oven, and sent to the mill to be ground. From the millstone the oil drops into a jar, and is thick, of a dark yellow colour, and sweet. It is used extensively by the poorer classes in place of cheese, syrup, honey, etc., and is popular on account of its saccharin properties.

Confectionery is made by mixing sesame oil with syrup and other elements.

Apply to C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Sesqui-Carbonate of Soda (see also *Carbonate of Soda*) should consist of 3 parts of carbonic acid and 2 parts of soda.

Seville Oranges. — See *Bitter Oranges.*

Sewing Machine Oil. —(See also *Clock Oil.*)—Generally a mixture of 1 part of the finest paraffin oil with 3 or 4 parts of olive oil. This makes an admirable machine oil. For finer purposes a combination of paraffin oil with vaseline is made as follows:—Melt 1 part of vaseline, and add to it 7 parts of paraffin oil; cool thoroughly, and allow the cloudiness which takes place to clear off by depositing. Then decant, and bottle the clear supernatant oil.

Porpoise oil also has been extensively used as a lubricant for sewing machines and similar constructions.

Shad. — Sp. *Savel.*

A common kind of fish (*Clupea alosa*), belonging to the herring tribe. It has been dubbed the king of herrings. Shad are caught principally in the Bay of Fundy, North America.

Two species (the *Alice shad* and the *Twaite*) are found off our own shores. One is about 14 inches long, and the other from 2 to 3 feet. The smaller is plentiful in the Thames, as well as in the Severn. They go up the rivers in May to spawn, but seldom pass London Bridge. The meat is rather dry, and not much thought of.

Shaddocks, Pumlows, etc.—F. *Shadecs, oranger pamplemousse;* It. *Arancio massino.*

A general name for the large, round West Indian fruit of the *Citrus decumana*, native of Cochin China, Japan, and the Friendly Islands.

There are several species of these fruits, all of the orange and lemon genus, but coarser; and they derive their name from Captain Shaddock, an Englishman, who first took them from China to the West Indies.

They are of roundish shape, 6 to 9 inches in diameter, with pale yellow skins and white spongy rinds, and weighing up to 15lbs. each. The pulp is sweet, juicy, and sub-acid, but somewhat insipid, although they make excellent preserves. The outside is more even-surfaced (less rough) than the orange. The rind is very thick, of a disagreeable and bitter flavour, and not edible unless it be the *grape fruit* variety. The inside of the fruit is divided into twelve or more cells, containing some a red and others a white pulp, and the juice in some kinds is sweet and in others sour. There are two or three egg-shaped seeds in each cell.

The trees on which these several fruits grow are very handsome ones; they grow 20 to 40 feet high, bear thick, glossy foliage and white fragrant blossom.

The smaller shaddocks are usually called *Pomeloes*, Pompoleons, or *Pumlows*, but the varieties known as Forbidden Fruit, mock oranges, or Grape Fruit, which grow in clusters, are the most esteemed.

For quantities, apply to Elder, Dempster, & Co., Liverpool, or Bristol.

Shag Tobacco.—(See also *Tobacco.*)—A strong tobacco, cut into fine shreds.

Among cut tobaccos, genuine *Virginia shag*, finely cut, is considered one of the best and purest smoking tobaccos prepared. To many smokers its flavour may be too full, and if the leaf be not first-class it will have a rank taste. During manufacture it is generally damped with molasses water.

Shalots or **Eschalots.**—F. *Echalotes;* Sp. *Escalonas.*

Sometimes called *shalotes*, scallions, or cibol—the latter names being derived from Ascalon, a town in Palestine, whence the plant was first brought to Europe by the Crusaders.

It is a bulbous sort of plant, botanically classed as *Allium ascalonicum*, of the onion tribe, with small bulblets, or cloves, in the axils of the scales, like garlic and rocambole (see *Scallions*). There are two varieties, the *Common*, which puts up long, slender, dark green leaves (see *Ciboul*), and the *Long Keeping*, with larger bulbs and dwarfer habit, and which will keep for about two years.

SHALOT.

The flavour of the shalot is stronger than the common onion, but it does not leave any strong unpleasant smell behind. The flavour somewhat resembles garlic, but is much milder.

Its bulbs are used like onions in seasoning, and its leaves are chopped up for flavouring soups, hashes, and other dishes.

Cheapest in October. Price about 5/- a Dutch bag of 50 kilos; also sold in "ropes."

For Shalots, apply to Allen Jeeves & Sons, Seddington, Sandy, Beds.

Shammy Leather.—See *Chamois.*

Shampoo Powder.—Anybody may make this. Usually composed of 3 parts borax, 6 parts powdered white Castille soap, 1 part of powdered extract of quillaia bark, 3 parts of dried carbonate of soda, and a little perfume. Oil of *Myrcia acris* is the perfume generally preferred; or mix 4 parts of powdered yellow soap, 1 part of powdered borax, and 1 part of powdered and dried washing soda.

Shamrock.—A good business is to be done in this article a few days before St. Patrick's Day (March 17) each year by florists, greengrocers, etc. Curiously enough, it has never been clearly settled whether the saint died or was born on that day, nor what shamrock really is, although the average Irishman will, of course, aver that it only grows on his native sod, and that the superlative sprigs are those from the vicinity of the traditional grave of the real or imaginary St. Patrick at Downpatrick. It is, therefore, all presumed to come from Ireland, but much is grown in England, and authorities do not appear to have picked out of the great trifolium family any specific variety of trefoil as the true, indubitable, and universal shamrock. In 1892 a number of soi-disant experts gathered specimens in eleven counties, and these, all certified to be the genuine article, were planted and allowed to flower, as the blossom discloses the real identity. The majority were then found to be *Trifolium Minus*, or yellow sucking clover, and the rest *Trifolium Repens*, marked by white flowers; both of these are, of course, sown largely in England every year to produce nutritious pasture. However, sentiment and botanical science seem here hopelessly antagonistic, for the wearers of shamrock rely more on the place of origin than the classification of this "chosen leaf of bard and chief," so rich in poetry and the legends of centuries.

At one time, and for a long period, the Lord Lieutenant always sported a large bunch on St. Patrick's Day, when the official ceremony of mounting guard at Dublin Castle was regularly carried out in honour of the anniversary, and the Viceregal Court and aristocracy honoured the spectacle with their presence. The cherished emblem has somehow appeared to suffer of late years, either from neglect or political developments. Its use has always been discouraged, if not actually forbidden, in the Army, although the English *rose*, the Scotch *thistle*, and the Welsh *leek* were permitted; but in March, 1900, Queen Victoria, in gracious recognition of the devotion and bravery of her Irish troops in the South African War, specially and spontaneously decreed that the shamrock might in future be worn on St. Patrick's Day by all ranks in the Irish battalions, as a mark of distinction, and not as a mere favour.

Shandy Gaff.—A drink prepared by mixing a bottle of ginger beer with a pint of good ale.

Sharks' Fins.—Ch. *Yü ch'ih.*

There are over 150 species of these carnivorous and voracious fish, mostly inhabiting the warmer seas. Those of the Indian Ocean are of large size, and, when caught, their fins are generally dried and sent to China, where there is a regular demand for them (especially in Shanghai and Hong Kong) as a food delicacy for the rich.

They are mostly used in soups, or as a beautiful dish of amber gelatine, with sauce, and prized very highly for their real or imaginary stimulating and restorative qualities.

In Norway and Iceland shark flesh is also cured like bacon, and hung up for about a year to make it tender. The smaller species of sharks are also often sold as food in the markets of Paris. Shark fins are very cartilaginous, and have a flavour similar to calf's head.

Shark Oil.—The livers of sharks contain a large quantity of oil, and this is sometimes used in place of cod-liver oil. The basking or mackerel shark (*Salachus maximus*) is chiefly caught for the sake of its liver, which yields six or seven gallons of oil. Shark-fishing is largely carried on along the north and north-west coasts of Iceland.

There are several kinds. The blue shark is "*Car Charins*" *glaucus*, the fox shark is *C. vulpes*, and the dreaded white shark *C. vulgaris*.

Although it is possible that it would not find favour with the devotees of Izaak Walton's gentle art, shark fishing has much to recommend it to lovers of sport. Those who have indulged in it, in Australia or elsewhere, declare it to be a most exciting pastime, and by no means an unprofitable one, seeing that a reward is paid by the Government for every shark killed. Ordinary rowing boats are the craft employed by the angler, or rather hunter, and the line is a strong cord, about half the thickness of a man's little finger. The end to which the hook is attached consists of a chain, or piece of stout wire, to prevent the shark from biting through the line, and so escaping. The bait most acceptable to the palates of these cannabalistic beasts is the liver of one of their own kind. In addition, when possible, a small shark should be captured, and the oil squeezed from its liver and allowed to fall upon the water. This naturally spreads over a considerable area, and attracts the sharks on the spot. As soon as the bait is taken the sportsmen begin to haul in the line. This is an easier matter than would be expected, for the shark makes little or no resistance until quite close to the boat. Then comes a sudden plunge, and the brute flies through the water at a great pace. The only course is to allow the long line to run out until the fish is tired, when it is again pulled in. The process is repeated until the creature is completely exhausted and can be easily dispatched. The *coup de grace* is generally administered by means of a rifle bullet. The shark, however, must be dragged well up to the surface before the gun is discharged, for it is useless to fire through more than two inches of water. The best way of tiring the shark is to fasten an empty oil-drum to the free end of the line. This is thrown overboard as soon as the shark makes his first rush. The oil-drum, of course, floats on the surface, and is followed by the boat until the shark has been completely tired out. The line is then taken on board, and the exhausted animal pulled in and killed in the way described above. It will thus be seen that shark fishing is by no means wanting in excitement, and those who indulge in it have the additional satisfaction of knowing that they are doing a public service in assisting to exterminate these pests. Shark accidents to bathers are mercifully few; but when they do occur they are generally of so ghastly a nature as to justify any means taken to make war upon these terrible monsters of the deep.

Sharps or **Midlings.**—*Pollards.*

Shaving Creams.—These usually consist of cold process soaps, made from the finer fats, or lard, with caustic soda. A little extra of cocoanut oil is added to the above soap, and the whole is then well mixed in a mortar with a little glycerine and perfume, and sometimes a little vermilion is added to give a flesh tint.

Shaving Pastes, Soaps, and Sticks.—These are special preparations for using, instead of ordinary soap, for shaving purposes, and made so as not to dry so readily on the face. Some are made of white soft soap, spermaceti and salad oil, melted, mixed, and scented.

A very fair quality is made by melting and mixing 4 ozs. Naples soap, 2 ozs. Castille soap, 2 ozs. honey, 1 oz. essence of ambergris, and 5 or 6 drops each of the oils of cassia and nutmeg. The satiny appearance observable in many fancy soaps and shaving sticks is due to this use of Naples soft soap as a basis. When this is rubbed in a mortar, with a pulling out of the mass, it assumes this peculiar finish.

Another shaving soap is made of white wax, spermaceti, and almond oil, by melting and mixing a ¼ oz. of each, and, while warm, beating in two squares of Windsor soap, previously reduced to a paste with a little rose oil.

A shaving fluid useful for travellers is made from 2 ozs. Castille soap in shavings, and half a pint of proof spirit. After dissolving, a little perfume is added.

Shea, Karita, or Galam Butter.—(Also known as *Karite*, *Gutta Shea*, etc.)—This is a kind of vegetable tallow (see *Vegetable Tallows*) nearly resembling gutta percha sap, obtained from the seeds or nuts of the *Bassia parkii*, or "butter tree," a scrubby growing wild forest tree, indigenous to the interior of West Africa, as the oil-palm is to the sea coast. The nut is enclosed in a sweet fleshy fruit resembling the Spanish olive, and tastes like the peach or over-ripe pear, but when the nut is shelled, dried, and hardened in the sun, it assumes a red-brown colour, with an aroma and taste very like the cocoa bean.

It is found in great abundance, covering immense tracts both of hill and plain, the chief difficulty being its carriage to the coast. In boiling the kernels so as to extract the butter, a strong odour of chocolate is emitted. The butter is very firm, and when made up into large white blocks it keeps good all the year round without salt. It is richer than cow butter, and scarcely any other kind is used throughout the Soudan.

It has been used in England since 1851 for making hard soaps, and may be used for any purpose to which palm oil is applied.

Sheep Dips.—These, which contain poison, can only be sold by registered chemists.

Cooper's Dip shows about 23 per cent. of white arsenic and arsenious sulphide—in other words, a packet weighing 1½lbs. contains about 4 ozs. of white arsenic, and 1½ ozs. of arsenious sulphide.

Shell-barks.—The nuts of Carya-alba, a species of hickory, whose outer bark is loose and peeling, and sometimes called *Shag-bark*.

Shellac.—See *Lac*.

Shelled or Unshelled?—*Shelled* almonds, maize, nuts, peas, etc., are terms signifying that these seeds have been separated from their husk or shell. *Unshelled* means in the husk or shell.

Sherbet.—This is the original name of a favourite cooling beverage used in the East, prepared from a decoction of barley meal, flavoured and perfumed with roses, orange flowers, violets, or citron, and sweetened with sugar.

In some countries it is cooled with snow, when this can be procured.

In England, the name "sherbet" is now given to powders similar to lemon kali, made up of powdered white sugar, bi-carbonate of soda, and tartaric acid, well dried separately, and then flavoured with oil of lemon, or any essence preferred, but more properly with otto of roses. A large teaspoonful of the powder put into a tumbler of cold water makes a very refreshing drink. A superior article is made of tartaric acid and bi-carbonate of soda, of each 1lb.; sugar, 2lbs.; and essence of lemon, 2 drachms.

An ordinary quality may be made of 28lbs. icing sugar, 6lbs. bi-carbonate of soda, 5lbs. tartaric acid, and 1½ ozs. of oil of lemon, with one or two drops of otto of roses. The essence, or essential oil, used for flavouring it should be first rubbed by hand into a little of the sugar till thoroughly mixed, and then passed through a fine sieve before mixing it all together. When flavoured with orange juice, it is called *Orangeade;* or ginger, *Gingerade*, etc.

While in a powdered state all these mixtures should be kept closely bottled, and perfectly dry.

Pink sherbet is made by colouring the sugar with ammoniacal solution of carmine, or solution of magenta, in either case drying the sugar afterwards.

In America any flavoured ice-water is called sherbet.

A sherbet is made in Turkey from powdered violet conserve (candied violets), but the only difference between sherbet and lemon kali is that more of lemon is put in the latter.

If sherbet be kept in a place where there is the least dampness, it spoils quickly, assuming a dull colour, and will not fizz when wanted for use. In all effervescing powders, the great secret is to have each ingredient thoroughly dried separately before mixing, but this is often sadly neglected.

Gardner's patent "Rapid" Sifter and Mixer, freely used for above. Prices

from 50/- to £100. Catalogues from Wm. Gardner & Sons, Engineers, Gloucester.

Sherbettee Nimbo. — A Delhi (Indian) name for the sweet lemons grown in that region.

Sherry or **Xeres** (pr. *Hêreth*).—L. *Vinum Xericum.*

So called from the town and district of Xeres (or Jerez) de la Frontera, in Andalusia, the wine capital of Spain, where sherry first came from; but a very large quantity is now made in the surrounding districts of Puerto Santa Maria, San Lucar, and Trebujena, on the west coast of Spain, between the Rivers Guadalquiver and Guadalete, and the shipment of sherry is the principal branch of commerce in Cadiz; but the wines of San Lucar, Chipiona, and Trebujena are shipped from Bonanza and Seville.

The vineyards producing this wine, nearly all of which is for the English market, are about 80,000 acres in extent, and the manufacture takes place under the care of Englishmen, or their agents, who reside on the spot. Indeed, three-fourths of the sherry industry in Spain is practically carried on by English merchants.

The Xeres vineyards alone exceed 15,000 acres, and yield about four million gallons yearly.

The name "sherry" is, however, not limited to the above, but has lately become a general term for any strong, light-coloured wines.

In its natural state sherry is very pale in colour, and used to be called a light wine, but to suit present ideas both colour and body are imparted by the addition of *arrope*, the Arab word for boiled must, or grape juice, evaporated down to a dark syrup-like treacle. This *arrope*, mostly made at San Lucar de Barrameda, gives colour, fulness, and flavour to the sherry. Hence we have both pale sherries and golden sherries.

The best qualities of sherry average about 14 per cent. of alcohol. Those containing 18, 19, or 20 per cent. are mixtures to which German potato spirit has been added to disguise other complex concoctions, and, unfortunately, imitations or substitutes of sherry abound, many of them quite innocent of the juice of the grape. A considerable quantity is manufactured in Hamburg and other parts of Germany.

Burnt sugar colouring, bitter almonds, peach kernels, oil of almonds, cherry-laurel leaves, sulphates of potash and soda, and a host of other adulterations, have led to the greatest confusion in the sherry business, so that sherry, as well as Madeira, seems to be declining in public esteem, and, in fact, to be beaten all along the line by *Marsala.*

Probably no wine, unless it be port, is more extensively imitated and manipulated than sherry. A fact recorded by the British Consul at Cadiz (Mr. Henderson) throws a lurid light on the sherry production. He says, in his report for 1891:—"Some time ago a friend and myself visited one of the most extensive *bodegas*, or sherry cellars, and among other samples of wine we were given to taste were two which appeared to us to be the same wine. It was with some difficulty we could decide which we thought best—which we preferred. One of the partners then told us that one was a wine sold at £50 a butt; the other was a wine manufactured for one of the largest mail steamship companies in the world at the rate of 4½d. per bottle, and retailed to passengers at 4/- per bottle!"

This, however, does not mean that spurious sherry is made in Spain, and there is no reason to doubt the purity of the product shipped from there. Not only is the importation of foreign spirit prohibited in that country, but it would not pay to use anything in strengthening it for the necessary transportation except genuine grape spirit, the juice of the grape being really the cheapest liquid procurable, hardly excepting pure water.

How Sherry is Made in Spain.—About a ton of freshly-gathered grapes is placed in each wine press, and dusted over with gypsum to absorb the dew and to lessen the acidity. The grapes are then trodden down by men in leather shoes, and the juice is run off into butts. The must is afterwards pressed again by mechanical process, and the juice thus

extracted is used for distillation. The juice in the butts is left to ferment and fall bright for 5 or 6 months, when it is racked from the lees—*i.e.*, drawn off clear into other butts. The lees are dried in the sun and then exported to France, where they are used for the extraction of tartaric acid.

The young sherry has a peculiarity which is unknown in other wines, and that is the formation during its early youth of cream of tartar, or "*flor de vino*," on the surface, which gradually sinks to the bottom and mixes with the lees. Wines which breed much flor de vino become either "*Finos*," Montillos, or "*Amontillados*"; while those which do not breed, or breed very little cream of tartar, turn into the richer, fuller-bodied wines known as *Oloroso*. From the same pressing of grapes from the same vineyard some of the butts will turn out to be Fino and some Oloroso. When the wine is racked from the lees, it has a small amount of grape spirit added to it—about 2 gallons to a butt of 112 gallons—more or less, according to the quality, vintage wines requiring no added spirit at all. The butts are then arranged in the bodegas (wine stores level with the ground), and are kept up to a uniform standard by the "solera" system, which consists in filling up the older butts as the wine is drawn off by younger wine of a similar character, so that the various soleras always retain their distinctive character, and consumers are able to get repeatedly, without doctoring or adulteration, the exact class of wine they prefer or have been accustomed to.

English sherry drinkers have not generally acquired a taste for the soft, dry delicate flavour of the sherries as they lie in the bodegas as nature made them, so to meet the English taste many of the wines have to be altered in character, some have to be sweetened with the wine called *Pedro Jiminez*, made from the grapes left on the ground to ripen, while others, on account of their nature, have to be fortified with spirit in order to bear transportation.

In 1895 there were 88 export firms engaged in the sherry trade at Jerez, among those doing the largest amount of business being 12 English firms. The sherry stock at Jerez usually amounts to about 500,000 butts, while some 50,000 butts are produced every year.

Sherries in England are, however, known chiefly by their names.

Montilla is considered to be the best quality produced. It is drier than ordinary qualities, and admits of no foreign mixture of any kind—not even brandy.

Amontillado, Palo Cortados, and Manzanilla are also noted varieties, but contain more solids and sugar than Montilla. *Moguer* is a heavily brandied imitation, made up outside the sherry district. *Paxarète* is a very sweet, light-coloured sherry, with a special flavour of its own. It takes its name from an ancient monastery a few miles from Xeres. Sherries should be judged by their taste rather than by colour.

Sherry Cobbler.—"Cobbler" is the popular name applied to a class of pleasant beverages in which wines are usually employed, although sometimes they are prepared with spirits. Sherry cobbler is composed of sherry, sugar, slices of orange, or a few strawberries or raspberries, and sometimes flavoured with a little powdered cinnamon or nutmeg. The tumbler is then filled up with *planed ice*, and the cooling liquid sucked through a straw.

Ship Biscuits.—See *Sea Biscuits*.

Shiraz Wine.—A Persian product, from the district of Shiraz, or Schiraz. There are three kinds, white, red, and sherry-coloured, all very sweet and luscious.

Shivowitza.—A well-known liquor made from the Shiva plum in the southern parts of Hungary.

Shoe Brushes.—These are generally sold in sets of three: a *hard brush*, for brushing off the dirt; a *blacking brush*, of longer, common hair, for brushing on the wet blacking; and a *polisher*, made of fine, smooth hair, for finishing the polish. Common kinds are made of fibre, but may easily be detected by plucking out two or three hairs or fibres and burning a portion of them, when the

difference in the smell will be quite noticeable. The hair used for these brushes is usually doubled, and drawn into the holes by wire, which is afterwards covered by glueing on a thin veneer of finer wood.

Shoe Dressings.—See *Blacking*, p. 116; *Polishes*, p. 124; *Brown B. Polish*, p. 147; *Liquid Blackings*.

Shoe Nuts.—See *Brazil Nuts*.

Shoemakers' Black (see also *Brown Boot Polishes*), for dyeing leather black, is usually made by dissolving, say, 1 oz. of green vitriol, or copperas, in a pint of water.

Shop Fittings, Fixtures, and Utensils.—The ordinary "fixtures" of a shop include those fittings which are fixed to the ceiling, walls, doors, and floors, such as gas fittings, pipes, pendants, rails, burners, etc., shelving counters. The "*utensils in trade*" comprise mills for coffee, pepper, tea and sugar, etc., scales, weights, scoops, canisters, twine boxes, and similar portable articles; but in taking or letting, selling or buying a business, it is always desirable to have a full list written out, so as to avoid unpleasant disputes afterwards.

Special Firm.—Parnall & Sons, Ltd., Narrow Wine Street, Bristol. (See advt., p. 9.)

Shortbread or **Shortcake.**—A crisp kind of tea-cake, highly popular in Scotland. Made with flour and butter, or lard, sometimes plain and sometimes sweetened and flavoured with citron and chopped almonds, or ornamented with caraway comfits. They are generally baked rather thin, and dabbed on top with an instrument called a "dabber," and the edges of the cake are usually pinched.

Scotch shortbread, made very rich, is often sent as a holiday present from Scottish people to their English friends. In most of the large towns—particularly in Edinburgh—the principal bakers make it up in dainty packages, artistically printed and lavishly gilded, for the multitudinous tourists from England, America, and the Antipodes, to take back home as mementoes of the "Land o' Cakes."

Shortening or **Scrapings.** — Shop names given to butter, lard, and margarine scrapings, as accumulated by provision dealers and sold cheap to confectioners and pastry cooks.

Shot (for Fowling-pieces).—This is an alloy of lead and arsenic, say, 30lbs. of arsenic to each ton of lead. It is made by running the molten lead (mixed with a little arsenic in it, to make it softer and take the round form more readily, like quicksilver) through a round sieve, or more generally by dropping it from a ladle with a serrated or toothed edge, from the top of high towers called *Shot-towers*. These towers are as high as a church steeple, and higher if for making large shot. Some towers have furnaces at different heights, the lower for small shot, and the higher for larger sizes. In these the lead is melted in a furnace at the top, poured on perforated iron plates, so arranged that the lead, after going through the holes, will fall down to the bottom of the tower. The shot is cooled and made hard by falling through the air, and the fall is eased by dropping into a well or cistern of water at the bottom (at Newcastle-on-Tyne a deserted coalpit is used instead of a tower). To separate the round pellets from those imperfectly shaped, the shot is conveyed by machinery to a series of wide boards, arranged like steps, the difference in elevation between each two being slight. The first and highest board is slanted sufficiently to set the shot rolling to the end of the steps. The other boards being horizontal, and there being a space of two to three inches between each two of the step-like boards, the perfectly spherical shot jump clear across these spaces, while the imperfect ones do not roll sufficiently well to make the leaps, and, falling out, they are rejected. The shots are afterwards sifted and graded from Nos. 0 to 4, and are polished by turning them round in a barrel with some powdered black lead.

Shot Pepper.—A shop term for ordinary peppercorns before they are ground to powder.

Shrewsbury Cakes.—These are round, thin, sweet little cakes, about twice as thick as a penny, and two or three inches in diameter, with either plain or gimped edges.

Recipe.—Beat ¼lb. butter to a cream, add 1lb. brown sugar, 2 eggs well beaten, and as much flour into a stiff paste. Roll out thin, and cut with a circular tin mould, and then bake in a slow oven. Currants, or more often ground ginger, are added to the ingredients mentioned, with a little cinnamon and nutmeg, or a little rose water to flavour.

Shrimps.—Da. *Reie;* Du. *Garnaal;* F. *Crevrettes;* Ger. *Garnelen;* It. *Squilla;* Port. *Camaroes;* Rus. *Ratshok;* Sp. *Camarones;* Sw. *Räka;* W. *Berdas.*

The true shrimp is a salt water, long-tailed *crustacean*, about two inches long, of the order *decapoda*, or ten-footed animals. It is closely related to the prawn, and the latter are, in fact, often sold as shrimps. The shrimp feeds on slugs, worms, and other small objects, and is itself liable to be eaten by other fishes and birds.

Shrimps inhabit most of the low, sandy shores throughout Europe, and may often be noticed darting or leaping in small pools left by the receding tide. They are captured in a hand-driven bag or small-meshed net, or in a scoop with a long wooden handle, which is pushed by men or women called "shrimpers," who wade in the shallow waters.

The metropolis of shrimps is the small fishing village of Leigh, near Southend, on the Thames, where the fishing is carried on with small trawls. The shrimps are boiled on board boat, and then picked over. They are sent up to Billingsgate at night by goods train, and sometimes 2,000 bushels a day. The take fluctuates greatly according to the weather. In a stormy season it is very small, and when too fine it is little better. Windy, but not dirty, weather is the best.

There are two species, the brown and the red. The brown are the most plentiful, larger, and more highly flavoured, and fetch a much higher price than the red. They swim near the shore, and are termed "buntings"; but the red are considered the most delicate. These carry a sword-like horn in their heads.

English shrimps are usually sold wholesale by the *bushel* or gallon, and Dutch by the *basket.*

They are in season all the year, though used most in the summer months, and are always sold ready cooked. About 320 go to the pint.

Barataria Shrimps, in 1lb. and 2lb. tins, have a good sale in some places. *Shrimps and Carabus* are mostly put up and sold in Canada and the U.S. Carabus are really a genus of ground beetles, including numerous species. They are noted for devouring many injurious insects in America.

How to Boil Shrimps.—Put about 4 ozs. of salt into 1 gallon of water, and when the latter boils have the fish placed in readiness, in a wire frying basket, and plunge them in at once. Boil quickly from five to seven minutes, according to size, but take care that they are neither under or over done, as in either case they would be, comparatively speaking, spoilt, and not nearly so nice as they might be. When done enough (that is, as a rule, when they change colour), take up the fish, shake them gently in the basket until they are thoroughly drained, then spread them out to cool, and use as required.

Shrimp Paste.—(See also *Potted Shrimps.*)—This is very easily made. Take some freshly-boiled shelled shrimps, and put them into a mortar, with a pleasant seasoning of cayenne and pounded mace, a small quantity of anchovy essence, and sufficient fresh butter to just nicely moisten (about 2 ozs. of butter to a pint of shrimps, the latter to be measured after being shelled), and pound the whole to a smooth paste. Press this firmly into small jars, cover the top with liquid clarified butter, and store in a cool dry place until wanted.

Shropshire Cheese.—This is very similar to the Cheshire make, and often sold as such. Large quantities are

made, and Shrewsbury is the central market for it.

Shrub.—Recipe: Infuse in 1 gallon of rum, or brandy, the peel of 3 oranges and 3 lemons and 1 quart of lemon juice; let this digest two months, then add some syrup of sugar and water, and in four days strain clear.

Another: To 1 pint of rum add half gill each of lemon and orange juice, also a small quantity of the peel, and sweeten to taste.

Siberian Crab-apples. — These pretty little fruits, sometimes called *cherry apples*, scarlet and yellow coloured, are about the size of cherries, but formed like ordinary crab-apples. They are rather austere to the taste, but excellent when preserved or pickled. A very delicious jelly, of brilliant colour, is also made from them. *Crab-apple Vinegar* is made in Wales and Monmouthshire. (See also *Verjuice.*)

The tree itself, *Pyrus baccata* or *prunifolia*, is a native of Siberia, where the fruit is largely used in making "*Quasar Punch.*" The tree is also often cultivated in old English gardens for its flowers and abundant fruit.

Sicily Wines. — *Marsala* is best known. It is of light amber or brown colour, generally fortified with added spirit, and is often sold as sherry. *Faro* is considered the strongest of Sicilian wines. *Terre Forte* is made near Etna, in vineyards belonging to the Benedictine monks. *Taormina* wines have a flavour of pitch. *Del Bosco* (of Catania) and *Borgetto* are highly esteemed products. *Vin de Zucco* is made about ten miles from Palermo.

Sidhee.—An Indian name for the large dried leaves and young capsules of the Indian hemp plant, without the stalks. Used for making an intoxicating drink, for smoking, and in the conserve or confection termed Majoon.

Sienna Earth.—A brown mottled ochreous earth from Tuscany. It is fine, smooth, and ferruginous, and used as a pigment both in oil and water colour painting. Its transparency and opacity are two of its chief characteristics.

Mr. Carmichael, in one of his Consular reports, gives an account of an industry of which little is generally known, namely, the manufacture of Sienna earths, ochres, and umbers, and describes a visit to the extensive works of Messrs. Enrico Ganni & Co. It appears that the earths and ochres all come from a district lying close to Monte Amiata, in the province of Grosseto; but little of the product is found over the close-lying border of the province of Sienna, and none at all near the city of Sienna, which has given its name to the famous earths. The ochres are washed in tanks through which running water flows, carrying off all impurities. Excavation is carried on only in the summer months, when the earths and ochres can be dried by natural heat, and a rainy summer gravely interferes with operations. Burning is also extensively carried on at the place of excavation at all times of the year, and charcoal being the fuel employed, the cost is very trifling, but the earths and ochres are also burned in the Leghorn works. Here, however, the principal operation is to reduce the material, whether raw or burned, to a fine impalpable powder by a process of grinding. It may be said that the pigments leave Leghorn in four different forms—namely, raw for burning and for grinding at place of destination, raw already ground here, and burned already ground. Italian siennas easily take the lead of all others for body, colour, strength, and durability. The absolute purity and genuineness of their character, still legible in the pictures of Italy's old masters, may be safely guaranteed in all acquisitions made in Leghorn.

Raw Sienna is the native pigment, prepared by simply drying the crude material, practically a clay, coloured by oxide of iron, as taken out of the ground.

Burnt Sienna is the raw material, roasted in a furnace before powdering.

It is known by its orange colour, the precise shade depending upon that of the raw earth, the temperature used, and on the time during which it is maintained.

Silent Spirit—(See also *Potato Spirit.*)—This is so named simply because it is flavourless. It is made in what are called "patent stills," from any vegetable matter which will yield alcohol by fermentation. By the aid of these stills pure spirits can be obtained even from damaged material, and, in fact, the use of perfect materials confers no advantage on the product.

Silent spirit undergoes no change in keeping, and must be flavoured to become drinkable. For that purpose it is either made *smoky*, to become like Scotch, or it is mixed with Irish pot whisky, to become like Irish whisky. Silent spirit is also largely employed to fortify wines.

The worst quality made is fit only for methylation, or trade uses, and not for drink.

Silicated Soap.—A mixture of a basic silicate of soda (made by boiling powdered flint in a close vessel, under pressure, with caustic soda), with hard soap in a melted state. It has excellent detergent properties, but feels too gritty for toilet use, and is better for household purposes.

Sillery.—This wine, or *Vin de la Maréchale*, as it was anciently known, is a white champagne, of amber hue, exquisite bouquet, and with a clear, pleasant, dry taste, but without sparkle. It is produced in the commune of Sillery (Marne), in France.

Silver Sand.—A fine, sharp sand, of silvery appearance, used for mixing with bird food, also for grinding lithographic stones, etc.

Silversmiths' Soap or **Plate Paste.**—Usually sold in 3d. and 6d. cakes. It should be free from mercury, and any other ingredient of injurious character, or the vendor may be held responsible for damages.

In use it is made into a lather, and employed to clean and brighten plate.

Simnels, or **Simnel Cakes.**—F *Pain demain.*

These famous cakes, or *Sunday bread*, are very popular at Eastertide, especially in Lancashire, Dorset, Brittany, etc.

Bury, in Lancashire, has long been noted for its Simnels, where they are still exceedingly popular, particularly during Lent, "Mothering Sunday," Mid-Lent, or *Simnel Sunday*, being the fourth Sunday in Lent. The cakes differ very much in make nowadays.

The interior generally consists of rich plum-cake, open at the top, but otherwise surrounded by a hard crust, with an elaborate ornamental border. This crust is coloured with saffron to a deep golden hue.

The cakes used to be first boiled for several hours, and then baked. It is not a little singular that the custom of making these cakes, and also the practice of assembling in one place to eat them, is now chiefly confined to Bury, although the custom in bygone centuries extended throughout the whole of England. The richer ones, made in Yorkshire, have almond icing running through them like veins.

The origin of the custom seems to be lost, but it is of great antiquity, and has certainly been traced back to the thirteenth century, when the Latin Church was all-powerful in these lands. It used to be the general custom on the fourth Sunday in Lent for all young people to go to see their parents—especially the female one—and take with them some little present, such as a cake or a trinket. Around Bury it is still a great day for visiting. A youth engaged in this duty was said to "go *a mothering*," and hence the day came to be known as "Mothering Sunday." The flour used was first blessed by the priests.

Sinapisms.—Compounds of mustard, flour, and water, as used for poultices. (See *Mustard Plasters.*)

Singapore Vegetable Tallow.—(See also *Chinese White Wax, Japan Wax, Shea Butter, and Vegetable Wax.*)—The kind best known as Singapore Vegetable Tallow is produced from the seeds of an Indian tree, *Minyak tangkawand*, and is a white, firm, and brittle mass, which becomes soft on being kneaded between the fingers, and melts at 116° F. It is said to be superior to olive oil for lubricating machinery, and

is used in Manilla for making candles. It also yields some glycerine, and about 95 per cent. of sebaic acids capable of being saponified.

Singhara Nuts. — See *Water* or *Trapa Nuts.*

Singlo, or Twankay Tea. — A superior variety of green tea, with large, flat, open leaf, never much rolled.

Sisal Grass, or Sisal Hemp (also known as *Henequin, Yashqui*). — A Mexican product (*Agave sisilana*), taking its name from the port of Sisal, in Yucatan, through which it was formerly exported, but it is now wholly shipped from Progreso. It is grown in most of the warmer countries.

This is a very remarkable grass, of which there are several species, all deriving their name from the country which produces them, as *Agave americana, Agave mexicana, Agave yucàtana;* but the latter is the only one successfully grown as a fibre plant.

The chief sort grown in Yucatan is the *white* "Henequen blanco," or "Sacqui" botanically known as the *Agave rigida*, var. *elongata*, which has teeth on the edges of the leaves and a whitish bloom, giving them a glaucous colour. The other sort, *Henequen verde*, or *Yashqui*, is of a bright green colour, and this is universally regarded as yielding the best quality of fibre of any known agave. The latter is, however, more particularly the sisal plant cultivated in the Bahamas.

Sisal grass is sold in England by most florists, seed merchants, and the manufacturers of various kinds of grass goods, for tying up plants, etc., and is likely to have a thousand uses now undreamed of as soon as its valuable properties become better known. It already forms one of the most valuable resources of Yucatan, if not of all Mexico. The natives put it to numerous uses, such as the manufacture of nets, mats, coarse garments, and hammocks, the United States also buying yearly about 30,000 of these latter. The grass grows in long, narrow blades or leaves, each plant yielding 50 or 60 a year, often 4 or 5 feet long, and these, when dry, curl up from side to side, forming a flexible string stronger than any cotton cord of same size ever made. Rope, cords, and lines of any size may be made from it. It bleaches without loss of strength, and takes dye as perfectly as any fibre known. It is impervious to the action of salt-water, and is not readily decayed or disintegrated by moisture and heat, the leaves, as well as the fibre, being found, when split, to be thickly covered with silica, which is a preventive against rotting.

Size.—Sp. *Sisa;* W. *Syth.* (See also *Gelatine* and *Glue.*)

A thin kind of glue, or viscid substance, usually produced from the dregs of the materials used in glue and gelatine making, also from old parchment, glove leather, fish skins, etc., by boiling them down in water.

After glue has been extracted from the coarser materials they are again boiled up a second and even a third time, and the liquid condensed into a thin weak jelly, which is the "size" used by painters, paperhangers, and plasterers. If the size be required to keep a little time, a little ground alum, dissolved in boiling water, is mixed with it before the final boiling. Size may also easily be made by boiling 1lb. of glue in a gallon of water. From the finer refuse out of which edible gelatine has been made, a substance for sizing pictures, drawings, etc., is similarly obtained.

Skin Grease. — A by-product, or waste fat, obtained in process of leather manufacture. The skins being placed in hydraulic presses, the grease is squeezed out and sold under above name.

Skin Varnishes.—The name given to various preparations for forming a thin covering on the skin. The principal bases for these preparations are collodion, gum tragacanth, casein, amber, turpentine, castor-oil, shellac, salicylic acid, oxide of zinc, borax, and glycerine.

Skirret.—An umbelliferous plant distinguished as *Sium Sisarum*, native of

China and Japan, is not so popular in this country as it used to be, but when the root is boiled it makes an excellent table vegetable.

Slab Cakes, or **Cut Cakes** (sold by the pound). — The introduction of these ready-made cakes, as an extension of the birthday, wedding, and Christmas cake system, appears to be displacing or supplanting much of the old-fashioned retail business in currants, raisins, peels, essences, spices, etc.

Whether the public gets better value by purchasing such delicacies in their entirety, or the ingredients in detail, is probably the main consideration, but it is only *one*. Women-folk may, without undue jealousy, reflect whether they are not to some extent undermining their own position, sacrificing their individualism or endangering their own domestic influence by providing their households with factory-made pastry instead of the home-made. A large number of grocers seem to foster the new fashion, good or bad; while others, more heedful of ultimate effects, think it better to point out to their *clientèle*, that not only school boys and other absent ones, but the great majority of people still feel infinitely more veneration for the charming cakes, plum-puddings, mince meats, etc., made at home by loving mothers, sisters, wives, or daughters, than for any "shop stuff." Small bakers cannot compete successfully with the wholesale manufacturers. The evenness and perfection in baking them is obtained by baking nothing else. The moisture in them is a fair sign of quality, and up to a certain point the longer they are kept the moister they become.

They should be unpacked at once on arrival from the factory, and placed on edge on shelves quite loosely, not piled one upon another, and in a cool airy place, so that the air may circulate among them and keep them cool; if kept close and warm they will sweat and mould, and if exposed to the sun they become dry and flavourless. Those cakes without fruit are the most susceptible to damage. The stock of slab cakes should be kept low and renewed often.

Slab Oil. — A name given to the sweet oils used by sugar boilers and confectioners for greasing the stone slabs or iron plates on which they pour their boiling sugar and to prevent the latter sticking to the former. If rancid butter, grease, oil, or fat be used, it will spoil the flavour of the sweets or confections. It is found best to use vegetable oil free from colour and smell, such as olive oil, cotton-seed oil, or even well refined petroleum jelly.

Slack.—See *Coals*.

Slip-coat Cheese. — A new, rich, and soft kind of cheese, made in Yorkshire of milk warm from the cow, and often with cream added. It is of small size, and closely resembles white butter.

Sloes.—(See also *Bullaces*, p. 150.) —The fruit of the black or sloe thorn, *Prunus spinosa*, and supposed to be the parent of the modern plum, but seem to be confined mainly to Europe.

The bush is very full of small, rigid, spiny branches, which bear a very pretty white blossom, very like hawthorn blossom, but earlier in the spring. The fruit, or sloes, are austere little droops, about the size of large peas, of nearly black colour when ripe, and covered with rich blue bloom.

In England, sloes are not considered of much value, but on the Continent they are preserved as jam, and an extract called German acacia is also obtained from them. In some parts where they abound, *Sloe wine* and brandy are made, and *Sloe juice* is much used both in the manufacture of spurious port wine, and in adding a roughness and colour to inferior port. In France the juice is also used as an astringent substitute for catechu. The dark red sloes common in the Southern States of America are a superior variety, and are regularly preserved as a very pleasant and agreeable kind of fruit.

Smalt Blue.—A deep blue, glassy pigment, obtained by oxidising the metal known as *Cobalt*. In other words, it may be described as glass coloured blue

by cobalt, and was first discovered by one Christopher Schurer in the 16th century. One recipe for making smalts is to fuse together roasted cobalt (zaffre) and a mixture of potassium carbonate with twice its weight of quartz sand.

When reduced to a fine powder it is called *Zaffre*, *Powder blue*, *Azure blue*, etc. (See also *Thumb Blue.*)

It is used to produce the rich blue colours in porcelain, encaustic tiles, fresco painting, etc., and also by laundresses to give a permanent blue tinge to linen that would otherwise acquire a yellow tint from washing.

Smalt blue mostly comes from Holland, and was long the only sort used for the blueing of paper, calico, linen, muslin, starch, etc., but since Guimet, a French chemist, in 1827, discovered how to make artificial ultramarine, this latter has, to a large extent, superseded it.

S'mbal S'mbal. — A culinary preserve or condiment prepared by the natives in Central Asia, particularly in Malacca and adjacent regions. It consists of buffalo flesh salted, dried, and coarsely powdered and then mixed with various kinds of fish similarly powdered, dried eggs, etc., and seasoned with herbs, spices, pepper, etc. It is very popular in Java, and is formed into cakes, with divisions for use as a condiment with stewed rice and other dishes. Europeans soon acquire a liking for it, and often keep on using it after returning home.

Smelts or **Sparlings** (*Osmerus eperlanus*), are a small delicate kind of fish, allied to the salmon family, and the name is applied to various small fishes, four to twelve inches long. It spawns at the head of the tideway, never going further up a river than the brackish water. They go up to the Dee, Medway, Thames, and other rivers, in the autumn, and after spawning in April and May, they return to the sea. The *Sand smelt*, or *atherine*, plentiful on the south coast, is sometimes sold for the true one, but its flesh is inferior. The latter has the second dorsal fin adipose, without rays, while in the atherine the second dorsal fin is membraneous and supported by numerous rays.

The true smelt is taken at Boston, Lynn, Norwich, and Brighton, and in the estuaries of many rivers running into the Solway. Generally caught by the paternoster line, baited with gentles or small shrimps, cooked by boiling or frying, and often pickled. Smelts have a peculiar odour, which has been compared to the smell of violets.

English smelts are sold by the hundred, Dutch by the basket.

Smoke Compounds.—Artificial tar mixtures for colouring and flavouring bacon, German sausages, etc., and which, when applied with a brush, dye the outer surface of the bacon or other provisions a reddish yellow, as though highly smoked.

Smoked Meats.—Smoked fish and other meats are much esteemed by some for their flavour, while others have a great repugnance to them.

Dr. Arnould, a prominent French scientist who has deeply studied the subject, says the best way to preserve hams and other meat, from the hygienic point of view, and the safest against bacteriological developments, is to smoke them, after leaving them in salt for a short time. It is also economical, because it does not damage to any great extent the natural nutritive qualities of the meat.

The efficacy of the smoking depends on certain chemical products disengaged during combustion, such as pyroligneous acid and creosote, the latter substance coagulating the albumen.

The smoking is best done in winter time. The goods, more or less salted or cured, are usually hung in an underground apartment, or closed room, over a smouldering fire, made up of green wood or leaves, beech, birch, or oak chips, or sawdust, but branches are mostly preferred. The flavour imparted depends largely on the kind of wood burnt. Fir and larch are seldom used, but the smoke from juniper branches or other odoriferous woods, such as rose-

SMOKED MEATS—(continued).

mary, peppermint, etc., are often used for the sake of the agreeable aroma they afford, and sometimes a few cloves are thrown into the fire. The superior excellency of the Westphalian hams is owing to their being impregnated with juniper. In farmhouses, where wood fires are common, the meat is often hung in a cool part of the kitchen chimney.

Karlstader hams should be still better because, instead of being cured in salt water brine, they are prepared in salted milk, and this gives them the delicious flavour that cannot be imparted by other means.

The smoke-houses of London and other large cities where hams and bacon are dealt with in considerable quantities, are generally built of fire-bricks in the form of arches or kilns, each of which is capable of holding some five tons of bacon. After being well washed and dusted over with pea-meal, the hams and bacon are suspended from the iron cross-bars which are built across the kilns at a convenient height. The fires are generally made of oak chips, over which is thrown a considerable quantity of deal sawdust for the purpose of creating a dense smoke, which is so essential for giving the rich brown colour so much desired. The kilns are then closed, and the bacon allowed to stay there from 2 to 4 days, according to depth of colour required.

The smoke-houses used abroad are generally constructed in a different manner altogether to our own, and by many are considered far superior for the purpose. The bacon and hams are hung in an upper room, whilst the fire is either on the ground floor on in the cellar. The smoke having to ascend some distance before reaching the smoke-room, is condensed and purified from its impurities by passing through a grating formed of fine wire gauze. The fires are made of different kinds of wood, oak or beech being considered the best, with the addition of a few sticks of juniper which greatly improves the flavour.

The meat requires a longer time to smoke owing to the smoke being somewhat cooled, but is supposed to have a far superior flavour to that of this country. A useful size of smoke-house for doing small quantities is 3 yards long, by 2 broad, and 7 feet high, with 4 or 5 cross-bars, from which the bacon is suspended. The roof should be made in such a manner as to prevent the smoke from escaping, with a small chimney at one end fitted with a damper, so that it can be opened or closed as desired. The floor should be of fire-brick, and the door must be so fitted as to prevent the escape of smoke. The flitches should be always hung with the shoulders downwards. After the articles have been placed in position, arrange underneath a layer of dry straw, next a quantity of shavings, then a good layer of sawdust (oakwood sawdust is the best if it can be had), and cover the whole of these with a thick layer of wet straw. This will cause the fire to smoulder for a considerable time, and also help it to emit a deal of smoke without causing it to burn away too rapidly. A few handfuls of juniper berries scattered on the above will greatly improve the flavour of the smoked articles. Oversmoking brings on reastiness, but this is usually prevented by dusting liberally with the pea meal.

Smaller lots are often smoked as follows:—A large empty cask, with the ends knocked out, is stood over a heap of green sawdust or leaves, etc., a few sticks laid over the top, and the meat piled on so as to pretty well cover the top and keep in the smoke, which is commenced by a red hot iron being plunged into the sawdust and left there. A small aperture should be arranged at the bottom to admit a current of fresh air. Slow is better than rapid smoking, because the smoke penetrates the meat more completely.

In America, according to the *National Provisioner*, summer or country hams are first sugar cured thus:—For each 100lbs. of meat use 4lbs. salt, 2lbs. granulated sugar, and 1 oz. saltpetre. Mix these thoroughly and divide into three equal parts. After the meat has thoroughly cooled rub with pure salt, and let it lie a day to get the blood out. Then rub

one third of the mixture on the flesh-side and especially at the end where the bone is. As each ham is rubbed pack it in a barrel, and three days later rub it with the second third of the mixture, transferring it to another barrel, thus putting the top hams at the bottom of the barrel this time, and so equalising the salting. Three days later rub with the last third of the mixture, and on the tenth day it is ready for smoking, or liquid smoke can be applied, which a great many use with satisfaction.

Cold smoking, or the so-called *quick smoking*, does not, however, destroy trichinæ, but hot smoking if properly carried out destroys all parasites. Hams should be allowed about 10 days. Sausages about 24 hours.

If smoked meat be again packed in dry salt it will keep for any length of time.

There are two reasons for smoking meats—the chief is to preserve them, and the other is simply to impart a smoky flavour, which, as already stated, some people are very fond of, while others positively dislike it. Hence, smoked bacon, fish, etc., should never be served to anyone unless they understand it and prefer it.

Smoked Pomerian Goose - breasts (*Pommerisshe Gaansebrust*) and goose legs are prepared, smoked, and sold in skins, and have a great sale among Germans at Christmas.

Smokine. — A fancy name for a *smoke compound*. (See latter.)

Smoking Mixtures. — (See also *Tobacco*, *Cigars*, etc.) — These are mixtures of various kinds and colours of tobacco leaf for smoking purposes, the aim of the manufacturer or dealer being to select and blend together appropriate growths, so that the flavour of one kind shall enhance that of another. All kinds of fancy names have been invented and registered for these mixtures.

Some of the mixtures are generally admitted to be happy combinations, and undoubted improvements over any of the separate-leaf tobaccos; but others are only a means for working up old leaf, sweepings, stalk, etc., with just a little good leaf to give it a character.

Smyrna Raisins. — (See also *Muscatels*, *Raisins*, *Sultanas*, etc.)— These are divided into several classes, according to quality, nature, or the places where they grow. The whole country round Smyrna — Tchesmé, Vourlah, the valleys of Meandre, Caistre, and Hermus—is almost covered with vineyards, and raisins are the staple product.

Black Smyrnas are the cheapest variety, and these mostly go to France. They comprise those of Thyra, Aidin, Scala, Nova, Melassa, Tsal, Ghounieh, Sokia, Yerli, etc., all of which are of a blue-black colour, and are used by the French in wine-making. The grapes being gathered in August and September are simply spread out on the ground for eight or ten days to dry, and are then shipped at once.

The *Red* raisins require more care, and are usually dipped in a lye of water, cinders, potash, and oil.

The name *Erikaras* is given to a good keeping sort, growing in the environs of Smyrna and around the villages of Serdikeni and Nymphio.

Snails, Edible. — F. *Livrie*, *Escargots*; G. *Schnecken*; It. *Maruzze*; Port. and Sp. *Caracoles*.

Snails are rarely used as human food in England, but in France, Switzerland, Austria, Italy, and a few other countries they are quite an ordinary dish on fashionable bills of fare, both cooked whole and *farcé*, or minced, also made into soup. In Burgundy (Bourgogne), France, snails are specially cultivated and fed in large *escargotoires*, or "snaileries."

There are many hundreds of species of these terrestrial air-breathing molluscs, most of them having their eyes situated on their horns, or stalks, and forming knobs, but only two or three sorts are generally selected for cooking purposes. One is the large-shelled Roman or vine snail, *Helix pomatia*, and the other the common garden snail, *H. aspersa*. The latter are gathered in large quantities boiled in milk, and considered a very

efficacious remedy for diseases of the chest.

Both kinds are common in England, and are often collected here for the Paris markets, while in China it is quite common to eat slugs. In South America, *H. nemoralis* and *H. hortensis* are regularly eaten under the name of *limaio*.

Snails have been considered edible luxuries from very early times, although the Jews were forbidden to eat them, *Lev. xi., v.* 29, 30. The ancient civilised people used to consider them great delicacies, and the Romans served up several kinds at their feasts; indeed, so great was the demand for them that parks were specially laid out for raising and fattening certain kinds. There really seems no reason why they should be loathed any more than oysters, periwinkles, and other small shellfish.

The vine snails are considered to be the best, and are in season from spring to the end of autumn. In cooking them *à la Bourguignonne*, they should be first boiled in water, with a little potash, then picked out of the shells, and dropped into luke-warm water. After being carefully washed, wiped, and replaced in the shells, a forcemeat—made of mushrooms, parsley, shalots, garlic, butter, salt, and pepper—is stuffed into the entrance of each shell, and they are finally roasted for about half an hour.

Everybody who has been to Paris must have heard of "*Prunier's*" establishment. If they have dined there they will doubtless remember how everything about "Old Prunier" and particularly his snails, possesses that "*gout du terroir*" which we are accustomed to look for in the choicest *vougeots* and romances. His white Burgundies are unsurpassed anywhere, and though the red sorts may not be drunk with oysters, they are perfect with snails, and there is that "*gout du terroir*" about them which, if you are not a snail eater, might almost persuade you to become one, for it is on the vine leaves sheltering the grapes from which these very wines have been pressed that the snail has fed, thereby giving to itself a very delicate Burgundy flavour. All this, by the way, does not seem to alter the fact (and M. Prunier is the first to admit it) that the Bordeaux snail—the "*petit gris*," as it is called—is far and away the best of all. But there is no sale for it, the public being ignorantly prejudiced in favour of the Burgundy snail, because the latter is larger and more highly flavoured. For tenderness, however, it cannot rival the "*petit gris*," and in a snail tenderness is more than flavour. There are of course snails and snails. There is the wood snail and the graveyard snail (the latter very fat as a rule), and they are as wholesome as the others, though not so tender. It is said by some whose experience is wide that there is nothing so bad in the world as a bad snail. Then there is also the snail which has eaten the leaves of vines infected with phylloxera, and though this does not make it poisonous it acquires a bitter taste, rendering it uneatable. The great point about snails is to catch and eat them in their right season, that is just after the first frosts have taken place. They then enter into a period of hybernation, closing up their houses hermetically with a species of cement. It is not well to purchase snails which are still active, for they cannot be properly cleaned, while the snail that has gone into its winter quarters no longer feeds, and does not require to vide, as the culinary phrase goes. The cooking of the snail is a most elaborate operation, and it is one of Prunier's chief triumphs that he has succeeded in solving the problem of producing a tender snail.

Snuff. — Da. and Sw. *Snus, snustobak;* Du. *Snuiftakbak;* F. *Tabac à priser;* Ger. *Schnupftabak;* It. *Tabacco da naso;* Pol. *Proszek;* Port. *Tabaco em po;* Rus. *Nosowoi tabak;* Sp. *Tabaco en Polvo.*

A powder, usually made by fermenting, and then drying or toasting in a kiln, the scraps, cuttings, stalks, sweepings, etc., of tobacco leaves, finally grinding them in mortars or mills. Other ingredients are afterwards added, to give the desired piquancy, colour, flavour, and scent. Snuff, being thus made from materials otherwise useless, is a highly profitable article, and depends largely on

the flavourings given by the manufacturer—these being kept as profound secrets by each house.

The fashion of snuffing has been rapidly declining of late years, but formerly it was supposed to sharpen the wits, stimulate the brain, etc., and Rappee was largely used by the great Napoleon, Gibbon, Voltaire, Dr. Johnson, etc. It was also in popular use as an errhine by medical practitioners.

The various fancy names under which snuff is sold are very numerous, and are constantly changing. The three principal grades, however, are the granulated, the finely-powdered, and the bran (or coarse portion remaining after sifting the finely-powdered).

Dry snuffs, such as "High Toast" or "Irish Blackguard," are apt to be adulterated with quicklime, common salt, potash; and the Rappees, or moist kinds, with ammonia, hellebore, pearlash, etc. The Irish, Welsh, and Scotch sorts are of lighter colour, and owe this, as well as their peculiar flavour, to the high temperature at which the leaf has been dried. Irish contains more of the ground stalk of the tobacco plant, and so is often called *stalk*.

Rappees are of two kinds, *black* and *brown*, prepared from the darker or ranker leaves. They are, in fact, usually made from leaf to which is added the small or broken fibres of tobacco which are too small to be smoked conveniently in a pipe. They obtain their dark colour by wetting the powdered tobacco in a bin or box, and allowing it to remain for a considerable time, turning it occasionally with a shovel, during which period it undergoes a slight fermentation which darkens the colour.

Lundyfoot, so called after its original maker, is a high-dried snuff, and derives its peculiar flavour from the high state of fermentation to which the leaf is subjected. Scotch snuff is made principally from light dry leaves, and has always been a favourite kind among females.

Foreign snuffs are often made up of cigar and cigarette ends, adulterated with sawdust, terra umbra, sand, ground glass, carbonate of ammonia, etc., and then scented with orris-root, tonka beans, otto of roses, etc. Other snuffs often contain 20 to 45 per cent. of water. Any snuff found to contain, after being dried at 212° F., more than 26 per cent. of added matter, is held to be adulterated and liable to £5 0 penalty.

Wm. Gardner & Sons, Engineers, Gloucester, make machines specially suitable for treating above. Catalogues free.

Soap. — Ar. Hin., and Mal. *Saboon*; Da. *Sæbe*; Du. *Zup*, *Zeep*; F. *Savon*; G. *Seife*; Gipsy *Sapuna*; It. *Sapone*; Per. *Sabun*; Port. *Savao*, *Savonette*; R. *Mylo*; Sp. *Jabon*; Sw. *Sapa*; W. *Sebon*.

Soaps are chemical compounds of one or more of the oil acids, more especially with the metallic alkalies of either *potassa* or *soda*, but also with some other salifiable bases. The most common soaps are either *margarates* or *oleates* of *potassa* or *soda*, made by boiling some common oil with the lye of wood ashes; *hard soaps* being made with soda, and *soft soaps* with potashes. In fact, soap has been well described as a chemical combination of any oily or fatty substance, with saline matter or alkali, whereby, with the aid of water and heat, the oil or fat acquires a solubility *in menstrua* with which, otherwise, it refuses to unite. In this way, fats, oils, and alkalies are effectually mixed with water, etc., and this is called saponification. Fats are composed of a solid substance called *stearine*, and a liquid substance called *elaine*. Now, when fat is mixed with soda or potash and boiling water, the stearine and elaine react on one another, and generate a solid pearly matter called *margaric acid*, and the fluid matter *oleic acid*, both of which enter into a species of saline combination with the alkali; while a third matter, the sweet principle, remains free. According to Pliny, soap was originally invented by the Gauls, and was first made in London, 1524. The varieties of soap nowadays are exceedingly numerous, and the raw materials employed extremely various, including nearly all kinds of fats and oils, vegetable as well as animal. Most of the oils require

SOAP—(continued).

bleaching, either by exposure to sunlight, by filtration, or by blowing hot air through them, but several of the vegetable kinds are used without.

For the sake of convenience, soaps may be divided into five classes :—

(1) Household soaps, such as curd, yellow, brown, and mottled. (2) Soft soaps. (3) Manufacturers' soaps. (4) Toilet and medicated soaps. (5) Dry soaps, soap powders, extracts of soap, washing powders, etc.

All the above dissolving readily in water, may be classed as *soluble* soaps, and have detergent qualities. They have for their base either potash, caustic soda, or ammonia, but there are also other insoluble kinds of soap which have an earth or metallic oxide as their base, and are only used for liniments and plasters, while others are intended for cleaning metals, glass, etc., and generally consist of either fine, white sand, ground marble, shale, slate refuse, whiting, or other similar material—sometimes to the extent of even 80 per cent. Two or three kinds in the market are, in fact, natural earths, merely refined a little and wrapped in papers. With the exception of the modern introduction of glycerine, paraffin, and certain other kinds of oil, there have been really very few radical changes in soap-making for many years.

The chief household and laundry soaps are now made from oils, or oils mixed with certain proportions of tallow and rosin. Cocoa-nut, palm-kernel, cotton-seed, palm, and other oils, are employed in immense quantities. These oil soaps have generally a darker, but more transparent, appearance than the old-fashioned sorts made with tallow alone.

Horse grease, the melted fat obtained by boiling the carcases of horses in South America, is largely imported as *Mare's grease*. This and *Bone grease* are largely used in making grain soaps, and still more in half-grain soaps; but that extracted from benzole is often very dirty, has a bad smell, and saponifies badly.

Soaps made from vegetable oils are much more soluble than those made of animal fats, and do not leave behind them such a disagreeable smell. They also "lather" better, and this deceives many persons into thinking they are better soaps.

To find a cheap perfume which would effectually cover the rosin and cocoa-nut odour in common soaps was long sought for by laundry soap makers. The most suitable base is the oil of pennyroyal, *Ol. Menthæ Puleggi* (not the American pennyroyal, *Oleum hedeomæ*).

Modern soaps really hold more water, and are apt to turn still darker on exposure to the air, but they lather freely and do not shrink much. Pure soap should consist of a fat, or animal, or vegetable oil, with either pure caustic potash or soda, and it may be manufactured either by the old boiling process, or by a newer cold process. The latter certainly has many advantages if pure materials be used, but there are numerous substances used for adulterating, "filling," or cheapening the cost, such as rosin, silicate of soda, china clay, silex, potato flour, glauber salts, and sal soda. Rosin, for instance, is only about one-seventh the price of tallow, but mixes readily with soap, and to a certain extent combines with the alkali.

Silicate of soda is formed by the fluxing of sand and soda together, forming a sort of soluble glass (water-glass), which is afterwards dissolved in water, and results in a thick viscous liquid, which is added to the soap very extensively, some scouring soaps containing as much as 30 per cent. of this cheap adulterant, but it is very injurious, tending to weaken fibre, perhaps even destroying it by mechanical action and breaking the tender fibres of the wool.

This property of appearing dry and hard, along with a heavy percentage of water, is a peculiarity of cocoa-nut oil soaps, which communicates the same property to tallow and palm oil soaps.

A yield of 200 or 300 pounds soap from 100 pounds of fat is quite common, especially if water-glass is used.

The mixture of oil, 100lbs.; resin, 70 to 80 lbs.; water-glass, 300lbs.; talc,

SOAP—(continued).

100 to 150 lbs.; and soda lye at 56° Tw., 240lbs., produces 800lbs. of so-called soap.

Silex and china clay are added in an exceedingly fine state of division, so as not to be easily detected, for even after dissolving the soap they remain for some time in suspension, and are also held up by the dissolved soap. Potato flour or starch has the power of solidifying with an enormous percentage of water, hence its addition as an adulterant of soap.

Glauber salts and sal soda (or sulphate of soda and carbonate of soda, with one-and-a-half times their own weight of water of crystallisation) also serve to increase the weight and percentage of water that can be added to the soap. Glauber salts have no ill effects, but are no advantage, except they are not so liable to effloresce upon the surface of the soap as sal soda. Some makers use about 5 per cent. of French chalk (steatite of soap-stone).

The surface of inferior soap is often artificially hardened by soaking the newly made bars for a short time in strong brine, and then rinsing and drying them.

Boric acid to the extent of 2 to 5 per cent. will neutralise alkalinity, and make the soap more firm and lasting, but, of course, less easy to lather.

The real art, however, of soap making consists principally in knowing how to determine from the appearance of the paste, and other circumstances, what kind of lixivium should be employed during each step of the operation.

As already shown, the great difference between hard soap and soft soap is that in hard soap *soda* is employed, whereas in soft soap *potash* is used instead of soda.

Hence, *hard toilet soaps* should contain about 64 parts of greasy matter, 30 of water, and 6 of soda; *washing soap*, say 60·6 of greasy matter, 45 of water, and 4·6 of soda; *soft soap* (green), say 44 parts greasy matter (seed oils), 46·5 of water, and 9·5 of potash.

The following list comprises several kinds in use at the present time, and most of them are more fully referred to elsewhere under their respective names; but many of our manufacturers have a host of soaps registered under other fancy titles. These latter are often of delusive weight and undesirable materials, which not only remove dirt, but eat away the fabric, and retailers should remind their customers that 16 ounces of good yellow is much more economical than 12 ounces of the extravagantly advertised articles. The chief varieties of soap are described under their own headings, and comprise:—

Alicante.	Kazan.
Almond, or	Marine.
Amygdaline.	Marseilles.
Arsenical.	Mercurial.
Beef Marrow.	Mottled.
Black.	Musk.
Bone.	Naples.
Buttermilk.	Olive Oil.
Calcium.	Orange Flower.
Carbolic.	Pearl.
Carpet.	Petroleum.
Castile, or	Quicksilver.
Castle.	Rose.
Chlorinated.	Salt Water.
Cinnamon.	Silicated.
Coal Tar.	Soapwort.
Cold Water Soap.	Soft Soap.
Curd.	Starkey.
Elder Flower.	Sulphur.
Fancy.	Terebine.
Floating.	Toilet.
Fulling.	Transparent.
Glycerine.	Venice.
Green.	Violet.
Guaiac.	White.
Gum.	White Soda.
Harlequin.	Windsor.
Honey.	Yellow.
Iodine.	Zinc.

Soap has been in use for at least 3,000 years, and is twice mentioned in the Bible. A few years ago a soap-boiler's shop was discovered in Pompeii, having been buried beneath the terrible rain of ashes that fell upon that city 79 A.D. The soap found in the shop had not lost all its efficacy, although it had been buried 1,800 years!

Great Britain now uses over 400 million pounds yearly, and exports over 55 million pounds, which latter is more than she used a century ago. France

makes about 300 million pounds a year, mainly in Paris. The United States, with its 500 soap factories, exports 30 million and imports 3 million pounds yearly. The consumption per inhabitant in Great Britain, France, and Belgium is about 9lbs. per annum. In Holland it is supposed to be more especially for house-cleaning. Spain uses very little soap, and the exports and imports are practically *nil*.

For all kinds of soap, apply to Morris & Jones, 13 to 19, Sir Thomas Street, Liverpool, also sole agents for the "Fairy" Soap Company; or to C. Windschuegl & Co., Importers of Castile and Olive Oil soaps, 1 Leadenhall Street, London, E.C.

"KARPETS KLEAN AND BRITE."—Sadler's Marvellous Carpet Soap cleans and revives the colours of carpets, rugs, silks, stuffs, and clothing; sells at 4½d. and 8d. per bar, packed in 14lb. boxes to cost 7s. Sells for 10s. Has 12 years' reputation. Makes friends wherever introduced. Attractively packed, sells all the year round, and is advertised by the purchasers! Wholesale Depôt: 150 North Street, Brighton, Sussex.

Soap Balls, Wash Balls, Savonettes. — These are made by dissolving common soap in a little hot water, mixing it with starch, and then moulding the mixture into balls, or rotating blocks of the compound upon a brass soap scoop; but sometimes they are formed into balls simply by hand, and when quite dry are finished off in a lathe.

A polish is finally added by rubbing with a little spirit on a cloth, or by exposure to wet steam for a few seconds. The starch acts on the skin as an emollient.

Soap Berries, Nuts, Pods, etc.—Ind. *Rishta, Ritah;* Mal. *Rarak.*

The seeds and pods of several species of trees growing in China, South America, West Indies, and in Florida, the chief being a small tree known as *Sapindus saponaria*, or *S. emarginatus.*

These hard black and very acrid seeds, kernels, or berries, are often dried and made into necklaces, rosaries, bracelets, etc., and were once very popular in England as buttons tipped with gold. Both the outer covering or pod and the roots are readily soluble in water, yield a large amount of *saponine*, and make a liquid which lathers freely. The natives of Brazil use them as soap. They are said to be remarkably efficacious in cleansing linen, and to go further than fifty times their weight of soap. With frequent use, however, they seem to have deleterious effects on fabrics.

One species, *Acacia concinna*, grows in the East Indies as a climbing shrub, with long flat pods, and these are commonly used in Bombay as a wash for the hair. They are also employed medically as deobstruants and expectorants, as well as in cases of jaundice.

The Chinese use several vegetable products as soap. The leaves of the *Hibiscus syriacus* and *Gingko biloba* are sometimes used by them for washing the hair, but the favourite soap is the fruit of a species of *Leguminosa*, called by the Chinese "feit sao-ton," or fat black beans. It is said to be a plant of the *Gymnocladus chinensis*, of which there is a specimen at Kew Gardens. The pods of the *Gleditschia chinensis*, called "tsao-chia," are also used for soap. The *Gymnocladus* pods are roasted and kneaded into balls, while the *Gleditschia* pods are broken into small bits and soaked in boiling water until an oily substance is extracted, when the water is ready for cleansing purposes. The fruit of the *Sapindus makwinsi* is also converted by the Chinese into a soap.

Soap Glue. — A gelatinous mass made by boiling together tallow and lye.

Soap Leaves. —For travellers, tourists, and others who do not want to be carrying a wet cake of soap about with them. Soap leaves are usually manufactured by passing sheets of tissue paper over rollers through a prepared and perfumed melted soap, while in a hot fluid state. When cooled the stiff sheets are cut into suitable-sized leaves, a single leaf being considered sufficient for once washing the hands.

Soap Liniment.—An anodyne and rubefacient embrocation, composed of about 10 parts of soap, 5 of camphor, 1 of rosemary oil, 70 of alcohol, and 14 of water.

Soap Powders. — (See also *Dry Soaps*, *Extract of Soap*, *Washing Powders*, *Borax*, etc.)—In making these the ingredients are thoroughly mixed without water, then well dried, and finally ground into fine powder.

Recipe: 6 parts yellow soap, 3 parts soda crystals, 1½ parts each of pearlash and sulphate of soda, and 1 part of bleached palm oil.

Another: 4 parts each of powdered curd soap and carbonated soda, with 2 parts of silicate of soda.

Soap powders are best used with hard water, as their excess of alkali neutralises the lime.

Special Firms: H. May & Co., Ltd. (manufacturers), Goodinge Road, Islington, London, N.; Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool.

Gardner's patent "Rapid" Sifter and Mixer, freely used for above. Prices from 50s. to £100. Catalogues from Wm. Gardner & Sons, Engineers, Gloucester.

Soap-stock, or **Sulphur Oil.**—A substance obtained from olives. The residue of the olives and kernels after the ordinary oil has been expressed is chemically treated with sulphuric acid, and then yields this *olio suffureo*. It is mostly imported from Lecce for soap-making, but is useless as a lubricator. The refuse left is locally known as "sansa," and is used for fuel.

Soapstone, or **Steatite.** — Also known as *Mineral White*, *Soap Earth*, *Talc*, *French Chalk*, etc.)—A soft, greasy, or soapy kind of mineral, consisting of a hydrous silicate of magnesia and alumina. It is commonly of a pearly-grey colour, but sometimes whitish green or greyish green.

It is employed for lining furnaces, ovens, hearths, and made into sinks, gas-burners, etc., also for the baths and sizing rollers used in cotton mills. (See also *Mineraline*).

It is sometimes heated and used for foot-warmers, and is made into slate pencils and crayons by glaziers to mark glass for cutting, and by chemists for the stoppers of vessels holding acids. Acids have absolutely no action upon this stone, and it is also non-absorbent.

The substance is easily wrought, turned, or planed, and may be screwed together as easily as wood. One variety is known as *Tailor's chalk*. In powder, it is used by shoemakers for dusting the inside of new boots when tried on. In Central India there are about twenty-five old soapstone quarries or pits in a belt of hills known as the Behlaipahari Range.

These pits are 40 to 60 feet deep, each having a shaft of 4 feet diameter. All around is dense jungle. Each pit is worked by 20 or 30 persons, the slabs of soapstone being carried up the shaft by women and children, and thence by coolies to a small village, where the slabs are planed on a lathe, and are then ready to be forwarded to Burdwan and other parts of Bengal. There are three large soapstone quarries at Alberene, in Albemarle County, Virginia. Twelve years ago the tract was a quiet farm, now it is a bustling colony of some 250 workmen, and the output about 63 tons a day.

This stone is remarkably hard and durable, but it is drilled out in large blocks of about 9 tons each, carried to the factory, and there cut up into slabs of varying thickness, and thence exported to all parts of the world.

A considerable quantity of "French chalk" is mined in Austria, where the owners are united in an arrangement as to output, price, export channels, etc.

Soapstone is usually sold in bags of 2 cwt., and perhaps the best is the genuine Italian silicate of magnesia, mined in Piedmont, which should be of uniform purity, perfectly ground, and of good colour. Inferior qualities consist of carbonate of lime and alumina.

Apply to C. Windschuegl & Co., 1 Leaderhall Street, London, E.C.

Soap-wort, or **Fuller's-Herb.**—F. *Racine saponaire*; G. *Seifenwurzel*. A curious but not uncommon plant (*Saponaria officinalis*) found growing

wild in hedges, fields, and thickets. It grows one to two feet high, bears white or pinkish flowers towards the end of summer, and gives forth a rather oppressive odour.

Its leaves and roots, which, like the aril of the soap-berry, abound in *saponine*, will froth in water, and may be used as soap. It is a natural remedy for that itching trouble known as poison-oak rash, and has long been used by the American Indians when poisoned by that oak. One or two applications generally suffice.

The herbage of the plant is said to increase the milk of cows. The ancients regularly used it as a cleansing agent, and it is now often employed in some of the final processes of washing silk and wool, leaving a fine gloss without injuring the colour.

Shochin. —A strong spirit obtained in Japan by fermenting the *saké* residuum, and is said to be used as a medicine, and also for dressing wounds.

Soda. — Arab. *Jumd Chenee;* Da., Du., It., Port., R., Sp., and Sw. *Sosa;* F. *Soude;* G. *Soda;* Malay *Charum;* Pers. *Sajee-khar.*

Soda is a wide term, and many traders have very hazy ideas about its various homologues. It is often applied indiscriminately to the hydrate, or caustic, or washing soda, carbonate and bi-carbonate of soda, each of which is fully described under its respective heading.

Crude soda, commercially called Barilla, used to be prepared on a large scale in the North of Scotland from kelp, or the burnt ashes of various seaweeds, and hence the old name, "*Scotch soda*," for soda crystals, or washing soda. Afterwards it was made from common salt by M. Leblanc's process, first put into operation about the end of 18th century, but now mostly by the ammonia or Solvay process started about 1860.

By Leblanc's method common salt was first decomposed by sulphuric acid, and the resulting sodium sulphate was then mixed with limestone and coal, and heated in a reverberatory furnace. This product, called *black ash*, consisted of soluble carbonate of soda and insoluble calcium sulphide, which were easily separated from each other by lixiviation. After nearly a century of unassailed supremacy, Leblanc's method has made way for the simpler ammonia process wherein a solution of salt is treated with bi-carbonate of ammonia, by which bi-carbonate of soda is produced, and at a cost considerably less than by Leblanc's method.

Soda is now sold at *nett* weights, bags and casks free, in the Western parts of the United Kingdom, but at *gross* weights, in casks, on the East coast and in London.

It is largely used as a sulphate in the manufacture of glass, and as a hydrate in the manufacture of soaps.

Soda Water. — F. *Eau sodique;* Port. *Agua de soda;* Sp. *Sosa.* (See also *Mineral Waters, Aerated Beverages,* etc.)

The true aerated alkaline water known by this name is, strictly speaking, a medicament of the antacid type.

It is not a beverage, if by this word is meant a pleasant thirst-quenching drink. Each 10 oz. egg-shaped bottle should consist of 5 to 15 grains of bi-carbonate of soda, dissolved in half a pint of water, and highly charged with carbonic gas. Indeed, the British Pharmacopœia orders 30 grains per pint, but that is not at all palatable, and only intended as a medicine.

It is a valuable remedy for sourness on the stomach, etc., but should not be taken as a regular beverage.

To meet the public taste, or for other reasons, manufacturers of soda water and potash water seem to vary the quantities of alkaline bi-carbonate, according to their individual judgment or fancy. Many bottlers knowingly supply so-called potash and soda-waters containing not a particle of either of these salts, but merely consisting of carbonised water; and occasionally clarified with alum, whilst others put only a quarter or half the quantity required by the official standard.

If made and supplied according to

that standard, it is probable it would, in most cases, be returned by the purchasers as "bad," "nasty," "soapy," etc., but, as these waters are often prescribed by medical practitioners as therapeutic agents, a recognised standard strength of, say, 10 grs. per pint, would seem to be very desirable.

It could easily be supplied of uniform strength, and without affecting the price, the cost of bi-carbonate of soda being certainly no obstacle to its employment.

The first portable soda-water apparatus was invented by Dr. Nooth in 1778, but the late John Matthews, of New York, in 1832, was the first to conceive the idea of manufacturing gas with which to charge the water.

Soft Fruits.—See *Green Fruits.*

Soft Soap, Green Soap, etc.—F. *Savon noir, Savon mou;* G. *Schwazseife;* Lat. *Sapo mollis;* Port. *Savao preto;* Sp. *Jabon negro;* W. *Sebon meddal.*

These gelatinous or semi-fluid soaps are usually made of the consistency of thick honey. They are generally of a yellowish-white or greenish-brown colour, and their qualities depend, of course, upon that of the materials employed in their preparation.

They differ from hard soaps in that *potash*, which makes the soap softer and more soluble, is used in the manufacture of the former, and soda in the latter.

In England the best soft soaps are chiefly made from linseed, rape-seed, cotton-seed, or crude olive oils, with occasionally a little tallow, which latter, by a peculiar arrangement, is dispersed through the soap in fine white spots, known as "grain," or "figging." This "figging" is no proof of quality, although it is purposely produced by the manufacturers, and often imitated with dextrine, or potato flour. The commoner sorts of soft soap are made from coarse fish oils, such as that of the whale, seal, cod, etc.

Scotch Soft Soap is said to be made from cod or whale oil and tallow, and usually contains 50 parts of fatty matter, 10 parts of potash, and 39 parts of water. There is, however, little demand for fish-oil soaps, which always have an unpleasant fishy smell, and generally a slimy appearance.

The process of manufacturing soft soaps is much the same as that adopted in making ordinary mottled soap. To produce a good quality the alkali should be employed only in suitable quantity to decompose the oil. Any excess beyond this amount will render the soap very caustic, irritating, and corrosive, though the scouring properties may be somewhat increased. A deficiency of alkali, on the other hand, will cause the soap to retain unsaponified oil, the presence of which is for some purposes very objectionable.

The proportions of oil and potash and water range from 6 to 10 per cent. of potash, 34 to 50 per cent. of oil or fat, and 42 to 57 of water, with, perhaps, 5 per cent. of glycerine in each 100 parts; but the art really consists in effecting the combination of the oil with the potash without the soap ceasing to be dissolved in the lye.

This boiling or close blending of caustic lye and fat requires, in order to be perfect, certain regular and intimate manipulations and precautions, which vary with the kind of oil or fat employed.

Analyses of Several Brands.—

1. A London make, contains 4½ parts potash, 45 parts oil and tallow, and 46½ parts of water.

2. 9½ parts potash, 44 oil, 46½ water.

3. *Belgian Soft or Green Soap.*—7 potash, 36 oil, 57 water.

4. 9 potash, 34 oil and fat, 57 water.

5. *Scotch Soft Soap.*—10 potash, 51·66 oil, 38·33 water.

6. *Savon Economique.*—11·5 potash, 62 solid fat, 26·5 water.

7. *Domestic Soft Soap.* — 7½lbs. potash, 10lbs. grease, 37½ gallons water.

Soft soap owes its cleansing to the large amount of alkali it contains, and is only fit for some purposes, such as washing coarse linen, scouring, etc. Its main use is as a powerful detergent in linen bleaching works. It is also employed in curing certain skin diseases.

The chief adulterants to be guarded against are potassium chlorate, potassium silicate, dextrine, and other starchy substances, *sea-weed*, treacle, and resin. The resin helps to stiffen the product, and so admits of more water being incorporated.

Mostly packed in firkins of 30, 32, 60, or 64 lbs. each, also in glass jars. When packed in tins it is liable to deteriorate in value—the tin causing the soap to "sweat." Some makers give short weights.

For prices, etc., apply to Geldart & Co., Manufacturers, Old Swan, Liverpool.

Soissons Beans.—See *Haricots*.

Soja Beans.—(See also *Soy*.)—Two varieties of this bean, *Dolichos soja*, are cultivated very extensively in China and Japan for the oil they yield—about 10 per cent.

The word "Soja" is from *sooja*, the name of a sauce made from the seeds in the latter country. Both varieties are oval in shape, and small in size, one having a whitish-yellow epidermis and interior, while the other is green throughout. The oil is used for both cooking and lighting purposes, and more oil is extracted in China from these beans than from any other oil-yielding plant in that country.

Soja meal is also made into bread, pastry, soups, etc. It is also mixed with water and then fermented for making a sort of cheese.

Solazzi Juice.—(See also *Liquorice*, *Corigliano*, etc.)—This old brand of Italian liquorice juice has been celebrated in this country for generations. It consists of the pure juice of the plant, and has been taken in the Pharmacopœia as a type of commercial purity, the only additions being a little gummy matter to give the sticks their final polish. It sells at about 1/3 per lb., while Corigliano and Pignatelli only fetch 10d. or 11d.

Soles —F. *Soles;* G. *Schollen;* Port. *Solhas;* Sp. *Lenguados;* W. *Sôls.*

Like most flat fish, these are caught in trawl nets. They come to the coasts and banks of estuaries to spawn and for food, but in winter return to deep water. As a table fish they rank next to the turbot. The flesh is white, delicate, and very firm. There are four kinds of soles: the common sole, the lemon sole, the variegated sole, and the little sole. The lemon sole, or dab (*Pleuronectes limanda*), is brown-orange in colour, and spotted. It is smaller than the common sole, but wider in proportion, though its flesh lacks firmness, and its quality is considered somewhat inferior.

The variegated sole, so-called from the colour of its upper side, is somewhat rare, and is smaller than the lemon sole, scarcely attaining six inches in length. The little, or red sole, is only four or five inches long, but comes up in the trawl nets with the others.

Solfuro Oil, or Huile d'Enfer.—A nasty smelling product, extracted from the residue of olives, from which the better oil has been extracted. It is used in the manufacture of soap.

In the Milazzo (Italy) district the sulfuro oil works employ about 200 hands all the year round, and the annual production is about 1,000 tons. The waste, after this inferior oil has been extracted, is used as fuel. (See *Soap-stock*.)

Solidified Petroleum.—See *Petroleum, Solidified.*

Soluble Cocoa.—(See also *Cocoa, Manufactured*.)—This is a misnomer, it should be called miscible cocoa, no cocoa being practically and entirely soluble. The most soluble forms of cocoa possible are either those treated with ammonia, which is very injurious to the human system, or decoctions obtainable by boiling the nibs in water and then straining off the part which is not soluble; but this would be as wasteful a practice as the other is pernicious, even if the beverage were palatable, for the insoluble portion, after all, contains the most nourishment.

A firm of German engineers recently patented a process supposed to render cocoa soluble for the preparation of soluble cocoa, cocoa powder, chocolate, etc. Roughly indicated, it is operated

as follows :—(1) Shelling the cocoa beans and cleaning husks and dirt from them; (2) acting on them in a rotary drum with steam at 80° to 90° C., charged with ammoniacal gas by passing through a side chamber fitted with gas cocks; (3) roasting at 122° to 132° C.; (4) pulverising preferably by a horizontal cocoa mill; (5) removing about 31 to 33 per cent. of the fat from the warm mass by pressure; and (6) pulverising and sifting the residue. The product is ready for use without admixture.

"Soluble cocoa," as sent out by the manufacturers, generally consists of prepared cocoa-nibs, with the addition of certain easily diffusible substances, such as sugar, sago, potato starch, or low-priced arrowroot, ground to impalpable powders, and mixed together. Sometimes the ingredients are melted, and then thoroughly incorporated. When boiling water is poured on to a little of the powder, and it is stirred sharply with a spoon, an emulsion is formed, which is apparently soluble for the moment, but it is only partly soluble, the small particles forming the bulk of the cocoa being merely held in suspension, and will soon settle into a sediment if the beverage be allowed to stand till cold.

If, however, a good quality of cocoa nibs be used with good loaf sugar and arrowroot, or sago, and these cheaper ingredients do not preponderate, there is no doubt the mixture is the best, cheapest, and handiest form in which the consumer can buy his cocoa.

Unfortunately, as with "French coffee" packers, there are unscrupulous, but "smart," manufacturers, who put up cocoa powders which contain very little cocoa at all, and that of the lowest quality, but by imitating the titles and style of package of the best makers, often gull the eager retailer into having his "own name" on the wretched stuff, which, instead of "paying better," and leading to fame, irretrievably injures both the trade and reputation of the latter. Every parcel of "own name" goods should be sedulously examined by a competent person.

It is evident that the practice of treating cocoa with alkali is largely on the increase. It is done ostensibly to render the cocoa more "soluble"; in reality, the cocoa fat is in part by this treatment saponified, so that the infusion made with it presents the appearance, and conveys to the palate, the impression of a richer and more full-bodied beverage. In addition, the powder is considerably deepened in colour, which is probably and wrongly judged by an ignorant public to indicate richness of quality. It is well known that the long-continued use of alkalies leads to digestive disorder, and consequently impaired nutrition. Yet we have cocoas containing from 1 up to as much as 3 per cent. of alkali calculated as potash. Cocoa, the indigestible fat of which has been properly reduced to 30 per cent. by pressure in hot bags, contains at the most only one-half per cent. of alkali. Such cocoas leave nothing to be desired as regards quality and flavour, while further tests have also shown the absence of an excess of nitrogen in the form of ammonia. This is why the treatment referred to is wholly unnecessary. It is absurd for manufacturers to argue that it is done to please the public taste.

Somari Nuts.—These are the fruit of *Caryocar nuciferum*, grown in Demerara. Only a few come to this country, and are used at dessert. (See *Suwarrow Nuts.*)

Sooje, or **Soujie.**—See *Semolina, Maize,* etc.

Soontool.—The fruit of the *Sandoricum indicum* of the Malay Isles, which is of a pleasant acid taste, and is made into syrups, jellies, and preserves.

Soothing Syrups.—These mostly contain opium in one form or other, and effect their object by more or less temporarily stupefying the infants operated upon.

All such preparations contain poison as the chief active principle, and, in the hands of those women who find maternity either a burden or a shame, an overdose by accident or design often removes helpless little lives or weakens

body and intellect for the rest of their days.

Many unsuspected nurses often surreptitiously dose their charges with similar results.

Murrell, in his work on poisons, states that about 15,000 children are killed every year by these syrups and other similar concoctions.

Only registered chemists are "privileged" to sell them; but some kinds are merely made up from essential oils of spices, carbonate of soda, etc. These latter are comparatively harmless, and good remedies for flatulency or acidity of the stomach, and may be sold by anyone.

Sorghum Sugar and Syrup.—F. *Sorgho.* (See also *Dari*, *Millet*, etc.)

A saccharin syrup, obtained from the stems, canes, or stalks of several graminaceous plants, such as *Sorghum*, and variously known as *North China Cane*, *Guinea Corn*, *Turkish Millet*, *Indian Durra*, *Joar* or *Jowarree*, *Zulu Imphee*, and in the West Indies, *Negro Corn*, each of these plants being, at a certain period of its development, nearly as rich in sugar as the best sugar cane. About 200lbs. of sugar is usually obtained from a ton of stalks.

These plants or grasses flourish in most hot climates, especially in India, China, Japan, Africa, and Egypt. There are three crops of durra yearly in the latter country.

The plants are very similar to maize, or broom corn, not only in habit and appearance, but in their proximate constitution. Sorghum grows best on light, sandy land, and requires but little manure. It has a reedy, cane-like stem, 18 to 24 inches high, bearing large clusters, or "sprays," of innumerable round grains about twice the size of turnip-seed, and very hard. These are made into porridge, cakes, etc., and used as food by natives in China, Africa, and Arabia, much the same as oats and barley are used in England.

In China all the sugar made is from these plants. Sorghum was introduced into America about 1854, as a source of sugar or syrup, in a zone north of that in which the sugar cane is grown, and there are now about fifty varieties cultivated there.

The United States Department of Agriculture has issued a most interesting pamphlet on "The Manufacture of Sorghum Syrup." The pamphlet explains fully the processes by which all grades of molasses and syrup are manufactured, and contains much valuable information for retail grocers. "Open-kettle" and "centrifugal" molasses are terms often used, but are terms, at the same time, of which few grocers understand the meaning. The Agricultural Department's circular gives a full and simple explanation of the meaning of the terms as follows:—

Molasses is what remains when more or less of the sugar contained in the syrup has been extracted. In many parts of the country, however, sorghum syrup is called molasses. In Louisiana molasses is classed in two kinds: "O.K.," that is, open-kettle or open-pan molasses, and "centrifugal" molasses. Open-kettle molasses is made in the same way as sugar-cane syrup, but the syrup is boiled in open pan to greater density than is usual in sugar-cane syrup. A part of the sugar in the syrup crystallises and is removed. The remaining molasses is then reboiled until it is sufficiently thick and heavy. As the excess of sugar has been extracted, the remaining molasses can be concentrated to greater density than is usual in sugar-cane syrup, and the final product is less liable to crystallise or to ferment. As it still contains considerable sugar, this open-kettle molasses is in active demand for use as human food. It is often sold at as high a price or at a higher price than sugar-cane syrup from which no sugar has been taken. In the market reports sugar-cane syrup and open-kettle molasses are not infrequently quoted from the close of the season with the addition of the words: "None in first hands." It is said that the manufacture of sugar-cane syrup and of open-kettle molasses is in many cases as profitable as the manufacture of sugar, and

requires less capital and skill; also that the quality of sugar-cane syrup and of open-kettle molasses made in small and cheaply-equipped factories is fully equal, and often superior, to that made in costly factories which work on a much larger scale.

Centrifugal molasses is the poorest marketable product of sugar cane. It is what remains when as much sugar as possible has been extracted from the syrup. It is the residue of sugar manufacture. It contains but little sugar; and all the impurities left in the juice by imperfect clarification. Centrifugal molasses has deteriorated in quality in recent years because of the improved method of extracting the sugar. So much sugar is extracted that the remaining molasses is often so impoverished that it has little value. It is sometimes sold at low prices, is fed to stock, fermented, or thrown away. It has been proposed to burn it or to return it to the soil. Sugar cane is grown in seven States. In those sections in which but little sugar is made the molasses has a high average value. The yield of molasses and its value are lowest in the great sugar-producing sections. The reason is that in the former sections the molasses is the principal object of cane manufacture, while in the latter sections the molasses is sacrificed in order to obtain the greatest possible yield of sugar.

In each of these classes there is a wide range in quality and in value. There are as many as ten commercial grades, namely:—"Fancy," "Choice," "Strict prime," "Good prime," "Prime," "Good fair," "Fair," "Good common," "Common," and "Inferior." Sugar-cane syrup, in its home wholesale market, New Orleans, brings 26 to 28c. a gallon; open-kettle molasses, 21 to 32c., and the medium grade, "Good fair," 25c. a gallon. Centrifugal molasses now brings from 8 to 20c., and the medium grade, "Good fair," 12 to 13c. a gallon. In Northern wholesale markets sorghum syrup of average quality brings less than sugar-cane syrup, less than open-kettle sugar-cane molasses, and ranks in the great trade centres about the same as the middle grades of centrifugal molasses.

Sorghum received a great impetus during the Civil War, when Louisiana supplies of cane sugar and molasses were cut off, and prices ran very high; but, although the industry has since been encouraged by liberal bounties, it has not been very successful, and is now cultivated chiefly by the Shaker communities, who also utilise the dried seed panicles in making carpet brooms, brushes, etc.

The Americans have not found sorghum very profitable as a source for sugars, although they do make and use large quantities of syrup from it. Most people there, however, prefer the syrup prepared from the maple to that of sorghum, the latter often having a very acid taste, some makes being "fit to take off the skin of the mouth." Recent results, however, show that by treating the syrup with alcohol the objectionable acidity may be removed. The sugar also becomes nearly white, and is strong to the extent of 90° in saccharin qualities.

The sap is, by the old system, expressed from the cane or stem at the time of flowering, and then simply evaporated. It is also obtained by the "diffusion" process as well as by the alcohol process, this latter having the advantage of not only eliminating the impurities in the juice, but also ridding it of the sorghum taste. Yield, about 100 gallons per acre.

Sorghum syrup is used extensively in Italy in wine-making, while in the South of France and Algeria the plants are grown chiefly for the alcohol which is extracted from them.

Most of these seeds imported into England are from North Africa, and the stalks of the plant, dry and rigid, are made into carpet brooms, whisks, etc., but neither the sugar nor the syrup is popular here.

Sorrel, or **Sour Dock.** — F. *Oseille;* G. *Sauerampfer.*

The common sorrel, *Rumex acetosa*, sometimes called Sour dock, is one of several species of the genus *Rumex*, and

is familiar as a plant growing wild by the sides of fences, ditches, etc. Its sour halberd-shaped leaves are sometimes used in cooking, and in making a decoction used as a fever drink.

The juice of this plant contains the salt which, in combination with potash, forms *oxalic acid*. Sorrel is little eaten in England, but in France *Rumex scrutatus*, a less acrid and more succulent species, is extensively cultivated, and used in salads, soups, etc., and is still more commonly dressed and used as a spinach.

Indian Sorrel.—The calyces or flower bracts of the Roselle, or Indian sorrel (*Hibiscus sp.*), as they ripen, become quite fleshy, and, being of a pleasant acid taste, are made into tarts, jellies, and refreshing drinks in India.

Souchet.—A French name for the pendulous mucilaginous tubers of the *Cyperus esculentus*, cultivated in the South of Europe, and eaten like nuts, being nutritive, restorative, and stimulant. They are also used in making orgeat. They are sent to Cairo and Alexandria in large quantities, and sold in the bazaars, combined with rice, in the form of cakes. The toasted roots are often used as coffee or chocolate.

Souchong or **Soochong Teas.**—These are general names for three or four assortments of fine black teas. The Chinese term for them is *Sian chung*, signifying "little plant," or "little sprouts." The smallest are called *Phaho;* the largest, *Toy-chong;* and a medium size, *Pow-chong*.

Souchongs rank next to Pekoes, and are very strong, but lacking the delicate flavour of the latter, although generally scented with the flowers of the *Tasmanium sambic* and *Gardenia florida*.

They are the most popular sorts used in France.

First Souchong is a grade better than *Second Souchong*, although growing on the same shoot.

Souffle Cases. — See *Ramequin Boxes* or *Cases*.

Soup Herb Essence.—(See also *Savoury Spice*.)—Lemon thyme, 1½ oz.; winter savoury, 1½ oz.; sweet marjoram, 1½ oz.; sweet basil, 1½ oz.; grated lemon peel, ¾ oz.; eschalots, ¾ oz.; bruised celery seed, ⅜ oz.; proof spirit, 1½ pints. Digest 10 to 14 days.

Soup Spice.—A good and salable one is easily made from the following herbs, dried and powdered:—Say, 2 parts each of parsley, lemon thyme, sweet marjoram, and winter savoury, with 1 part each of lemon peel and sweet basil. They should each be carefully dried, powdered separately, and then well mixed together, and bottled as soon as possible, to preserve the aroma. Soup spice is sometimes retailed in small packets, as well as in bottles.

Soupe Maigre.—The French name for a weak broth, soup, or gravy, made either entirely without meat, or with the highly-esteemed fish of that name.

The *maigre* somewhat resembles a large basse, is often found 3 to 6 feet long, and very common in the Mediterranean.

Soups.—F. *Soupes;* Port. *Sopas*.

Tinned soups do not always receive the attention which they deserve from grocers. It is a pretty well-known fact that at many hotels and restaurants of repute, customers often partake of canned soup, under the delusion that they are enjoying the special productions of the local *chef*. Country confectioners who do a small refreshment business with tourists, market people, etc., would also find these soups very handy, and easily got ready at the shortest notice.

Soup canning is often called preservation *in vacuo*. The first simple process consists in enclosing the meat, with a little water, into a tin with a small aperture, or "pin-hole," at the top, and then placing it in boiling water nearly up to its top, and, when the steam has displaced the air, stopping the hole at once with solder. This process dates back over 50 years, and it cannot be said any great improvements have been made lately. The meats have merely come more into general use.

A moderate degree of heat, such as that of boiling water, is not sufficient to expel all the air.

The three methods now in vogue are—(1) The ordinary Aberdeen process; (2) the steam-retort process; and (3) the chloride of calcium process; but, though varying in detail, are all practically the same in principle.

It is by one or other of these methods, with trifling modifications, that almost all the solid meats, fish, poultry, vegetables, soups, stews, the variety of odds and ends such as kidneys, tripe, sausages, minced meats, and several other "made dishes," both in this country and abroad, are preserved. When once properly preserved, the contents will keep good for 50 years, or as long as the air is kept out; but if the tin gives way from accident or rust, and let in the atmosphere, the meats at once go bad, showing a convexity or bulginess in the form of the tin.

The collapsed tins, those with the tin bent inwards, are a proof, on the other hand, that the contents are good, the collapsing being caused by the very perfectness of the vacuum within them.

The kinds ordinarily tinned are bêche de mer, bouilli, cockie leekie, consommé, game, gravy, green pea, grouse, hare, hotch potch, julienne, mock turtle, mulligatawny, ox-cheek, ox-tail, oyster, real turtle, tomato, vegetable, etc., and most of them are separately described elsewhere in this book. Gravy is, of course, the most useful to keep in stock, because so many others (such as vermicelli, macaroni, julienne, spring soup, etc.) can easily be improvised from it.

The *quickest* way to serve a tinned soup is to give it a boil-up in a stew-pan, with the addition of a little ordinary "stock;" add a little salt to taste, and serve it up piping hot in a soup plate, with a nice roll, for one shilling. A better way, however, when time permits, is to place the tin in hot water, and boil it up for about twenty minutes.

With many of these tinned soups a tablespoonful of sherry is a great improvement. Several kinds of soups are also prepared in a dry, desiccated, or compressed state, and are sold in tins, capsules, tablets, packets, etc. The French chemist and botanist, Parmentier, of potato fame, over a century ago, was the first to indicate the uses that may be made of many farinaceous food substances by drying them in an oven and then pulverising them, so that, by adding a little hot water and salt, very excellent soups may be easily prepared.

In lieu of mentioning the names of those who have "invented" condensed soups, etc., 120 years after their real inventor, we would refer those interested to the still valuable book published by the above M. Parmentier, and entitled "Researches on Nutritious Vegetables, etc.," and especially to the chapter on "Nutritive Powders and Tables."

Sour-Crout.—F. *Choucroute;* G. *Sauerkraut.* (See also *Cabbages.*)

A very popular form of vegetable food in Germany and other parts of Northern Europe. In Germany and Holland it is prepared by slicing up and shredding large white cabbages (in same way as red cabbage is pickled in England), and filling into clean barrels, with alternate layers of salt. A few juniper berries, carraway seeds, or other condiments are sometimes added to impart flavour.

The barrels being filled as they stand on one end, with the other end knocked out, a small head is placed on the top of the cut cabbage, with heavy weights or stones on the top, so as to subject the mass to considerable pressure for a few days.

As soon as fermentation sets in, and a sharp sour smell is perceived, the cask is well filled up, carefully covered, either with loose boards or properly headed up, and stored in a cool place till the contents are required for use. The barrels thus stored away generally emit a very unpleasant smell, arising from the fact that cabbages contain a notable quantity of sulphur, which is thus exhaled in the form of sulphuretted hydrogen.

Sour-crout is, however, said to be very wholesome, and as it will keep

good a long time, it is very useful in winter and early spring, when vegetables are scarce and dear.

Sometimes these white cabbages are cut late in the autumn, stripped of their outer leaves, and packed closely in layers in a hole in the ground to blanch them. They are then covered up with dried garden leaves, and finally closely covered over with earth, to shut out the air. Sometimes flagstones or weighted boards are added. In the course of a few months the cabbages are entirely changed, in a similar way as hay changes after sweating in a stack, and have become a dull white colour to the core. They are then taken up, and packed in barrels, with salt.

Sour-crout, after being washed from the salt, is often eaten cold, as a salad, but more often stewed in its own liquor, and served with sausages, bacon, or other meats.

Large quantities reach England, and particularly London, every year from Rotterdam and German ports. Prices, 25/- to 30/- per hogshead, when well filled (casks free).

Sour Oranges. — See *Bitter Oranges.*

South African Venison.—See *Biltong.*

South American Wines.—*Chili*, with some 100,000 hectares of vineyards, mostly around Concepcion, occupies the foremost position in the quantity and the quality of its wine production in South America. Crop, about 2,000,000 hectolitres a year. The vines are mostly from French plants, and the system of culture is that known as the Guyot. About 40,000 hectolitres are exported yearly along the Pacific Coast to Bolivia, and as far as Panama.

Varieties: Red and white dinner liqueur wines, and a common fermented wine known as Chica.

Argentina has only about 23,000 hectares under vines, and the product does not exceed 600,000 hectolitres, three-fourths being raised in the provinces of Mendoza and San Juan.

Peru.—Vine culture in this State has decreased enormously in late years, and the small trade once carried on has almost disappeared, or given way to Chilian enterprise.

Southam Cheese.—A very fine kind of new-milk cheese made in Warwickshire. They are flatter and broader in shape, but otherwise of a consistency and flavour very like *Stilton.*

Sowans.—A kind of porridge or gruel prepared in Scotland from the husks of oats. The husks are steeped in water for one or two days until they begin to ferment, and the mass is then skimmed and boiled. When cold, it assumes a gelatinous or blanc-mange appearance. The same dish is known as *Succan* or *Llymru* in Wales.

Soy.—This thick, brown liquid sauce, or ketchup, is not made from black beetles, as some humorous connoisseurs persist in suggesting, but from Soja beans, a kind of black beans, variously known as *Glycine*, or *Dolichos soja*, *Soja hispida*, etc., or Soy-beans, or peas. These beans grow very luxuriantly in China, Japan, and India. They are something like our kidney beans, bear violet flowers, and hold an important place among oil-bearing plants. They usually grow wild, and have long, climbing stems, covered with rusty hairs. Considerable quantities of these beans are imported into Europe as a forcing food for milch cows, and in the preparation of patent foods for infants and invalids.

They are entitled to the highest place among all known pulse, their nutrient value being 105, as compared to 80 and 87 for the nutrient values of peas and lentils.

Soy is generally made by boiling the beans till soft, and then mixing them with an equal weight of crushed wheat or barley and salt. After covering and leaving this mixture about 24 hours to ferment, other ingredients are added, and the whole is then stirred daily for about two months. Finally, it is squeezed, and the liquid is filtered, and preserved in wooden vessels, in which it gradually brightens and clears by long

keeping. It should be thick, but of a clear brown colour, not too salt or sweet, and of agreeable flavour. When shaken in a glass bottle, it should leave a coat on the surface of a bright yellowish-brown colour.

The manufacture of China soy and "bean-curd," or "cheese" (see *Torfu*), is said to be one of the most flourishing in the prefecture of Wenchow, where there are five large factories making them from the Chin-Kiang *white* beans, sea-salt, flour, and water.

The ordinary batch there is 123⅓lbs. of beans, which are first washed and boiled for six hours in a large cauldron, after which the fire is withdrawn, and the beans are allowed to simmer and cool for about 18 hours, after which they are ground to a thin paste with the water in a mill. The "broth" is then drawn off and kept for use later on in the process. To the mash is added 213⅓lbs. of flour. After being well mixed it is filled into large shallow baskets of bamboo, each of which is then fitted on a wooden frame. These frames are piled one on top of another to a great height, and are exposed in the sun for five or six days, or in cold weather seven or eight days, until the mash gives out the proper effluvium and turns yellow. The mass is next emptied into a large vat, and on it is poured a quantity of clarified brine, which has already been mixed with the bean "broth" above mentioned. It is all then beaten up together and left to ferment. After three months or so, a yellow oil appears, and to this oil more brine is added (to each 667lbs. of oil, 2,400lbs. of brine), and about 10 per cent. of salt to thicken it. The result is "China Soy," of which there are about six different qualities, the best being about five times the value of the lowest.

English Soy. — An inferior article sometimes made in this country by simply saturating molasses, or treacle, with common salt. A better sort is made as follows: — Take 1 gallon of malt syrup, 5lbs. treacle, 4¼lbs. of salt, 1 qt. mushroom juice; mix with a gentle heat, and stir until thoroughly blended, and in a fortnight the clear portion may be drawn off as a very fair imitation soy.

Soy forms the chief base of nearly all the bottled sauces and relishes in the market.

Apply to C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Sozodont. — A dentifrice liquid of reddish colour, consisting of 5 grm. oil soap in 6 grm. glycerine, 30 grm. spirits, 20 grm. water, perfumed with a few drops of oil of peppermint, oil of cloves, oil of cinnamon, and oil of anise, and coloured with cochineal. Sozodont powder is a mixture of carbonate of lime, magnesia, and Florentine orris-root. None of the ingredients can be considered objectionable.

Spaghetti or **Sparghetti.** — See also *Italian Paste.*)—A smaller or finer sort of "paste," made in Naples, from the same flour and in the same way as macaroni, vermicelli, etc., but in long straight lines.

The words in Italian literally signify "little threads," hence it is of a much thinner and more fibry appearance than vermicelli, and appears to be coming very much into fashion.

Spanish Black or **Burnt Cork.** —A valuable powder, or pigment, made by burning waste or inferior cork, cork dust, etc., in a closed vessel.

Spanish Flies. —A common name for *Cantharides.*

Spanish Juice.—See *Liquorice.*

Spanish Nuts.—See *Barcelonas.*

Spanish Onions. — Often called *Port Onions*, because large quantities are shipped from Oporto, but they are nearly all grown in Spain. They are quite distinct from the "Spanish" onion of the seed shops. New crops usually arrive in this country about the end of August, or early in September, in oblong wooden cases, strengthened with one or more internal partitions, and contain about 1½ cwts. in each case. Cases marked "4's" contain 4 layers in the case, "5's" contain 5 layers of smaller onions.

These grand onions are said to owe their immense size, beauty, and mild flavour to the climate in which they are raised.

To obtain very large sizes, the Portuguese seed is sown in autumn, and the smallest buds are planted out in spring. They scarcely meet any check in the winter, but usually grow continuously for twelve months. They cannot therefore be grown so large in England.

Spanish Sweet Peppers.— See *Pimientos.*

Spanish Tea. —In Spain there are factories for artificial tea, two of which have been working about five years, and, what is more singular, they possess a government patent or privilege for the invention. The tea is made by mixing the roasted remains of beetroot from the sugar factories with spent leaves. A perfume is added, and the green colour is given with sulphate of copper, which, of course, is very noxious to health.

Spanish White. — F. *Blanc d'Espagne;* Sp. *Polvos de Espana.* (See also *Whiting.*)

Originally a white earth obtained from Spain, and employed as a pigment. Often formed into cylindrical masses, dried in the air, and called "Paris white," from the fact that a similar earth (carbonate of lime) is found in the environs of Paris (Meudon or Bougival). The name is now chiefly confined to an impalpable powder, prepared by pulverising and repeated washing. It is used in making putty, polishing powders, tooth powders, and a cheap white paint.

Spanish Wines. — The Spaniards are the largest wine drinkers in the world, although the French profess to be the best *connoisseurs.* The manufacture and export of wine is now the most important business of Spain.

Owing to greater care in production, many excellent red wine at low prices are now to be had from Spain. The principal ports for the export of cheap kinds are Barcelona, Valencia, Alicante, Huelva, Pasajes, Vineroz in Castellon, and Cadiz. Sherry naturally comes from the latter port, while other full-bodied wines are exported from Barcelona, Santa Pola in Alicante, Cadiz, and Tarragona.

The sterling value of wines exported were :—

	1896	1897	1898
To	£	£	£
France . . .	4,202,000	3,435,000	4,330,000
England	110,000	160,000	170,000
Rest of Europe and Africa . .	205,000	235,000	300,000
Cuba and Porto Rico	316,000	345,000	260,000
Rest of America	382,000	387,000	426,000
Asia & Oceania	31,000	57,000	21,000

The total wine product there is about 500 million gallons a year, of which Valencia, Barcelona, Tarragona, and Alicante yield about 35 millions each, the province of Cadiz furnishing only about 10 millions.

The average amount of wine from each hectare of vines is 528 gallons, or 213 gallons per acre. The amount of juice obtained for each 100 kilos (220lbs.) of grapes is 72 litres (15·8 gallons), while the total weight of grapes usually gathered and pressed for wine is about 25,000 tons.

In Spain, wines are stored in large warehouses, called "bodegas" (the Spanish name for cellars on a level with the ground), which are very lofty and well ventilated. That of Senor Domecq, in Jeres, contains, ordinarily, some 15,000 butts, each averaging 108 gallons, or 52 dozens of bottles to the butt.

Many of the Spanish vignerons sell their wines very cheaply, and in the vineyards very good qualities are often obtainable, with from 14° to 15° of alcoholic strength, and of very fine colour, at extraordinarily low rates.

In some districts wine is really cheaper and more plentiful than water, so much so that it is often used instead of water for mixing mortar and other purposes.

The following are the best known growths :—

Alicante.	Canary.
Allogne.	Grenache.
Amontillado.	Malaga.

Malmsey, or Malvasia.	Rota Tinto.
Manzanilla.	Sherry, or Xeres.
Montillo.	Tarragona.
Muscatel.	Vale de Penas.
Rancis.	Vino Tinto.

Most of these are more fully described under their respective names in other parts of this book.

Sherry, often spelt Xeres or *Jerez* (pronounced Hêreth), is the leading wine of Spain.

Paxarette (rich, sweet, and sparkling) is so named from a convent in Jeres de la Frontera, Andalusia.

Rota wines are also produced in the same district, and are mostly coloured, or "*Tintos*." Here also are *Ranico*, *Moguro* or *Moguer* (a cheap, light wine), and *Negio*. *Guindre*, so named because it is flavoured with cherries. *Tintilla* is an excellent muscadine red kind.

The best wines of Aragon are *Carinena* and the *Hospital*. Boorja produces a luscious white wine. Valencia yields *Beni Carlos*, *La Torre*, *Segorbe*, and *Murviedro*, all of fair quality. *Vino brozno* is an austere kind, made extensively at Chacoli, in Biscay. Catalonia and Val de Penas (valley of rocks) wines are mostly red, and largely shipped to England as *Catalan Port*, etc.

The consumption of the red wines is increasing, but that of the white wines of Spain is decreasing in England.

Sparklets or Carboleum.—These are small pear-shaped steel cases, each containing 2 to 5 grammes of liquefied carbonic gas (carbon dioxide). It is this gas which really causes the sparkling result in all aerated liquids. The "sparklets" are retailed at about 1/- per doz., packed in a small case, so that a person may aërate his own glass of wine, water, milk, or other drinks as required. He must, however, first put the liquid in a special strong bottle (price 4/6), and then add the contents of the sparklet to it, and the aeration follows instantaneously. Unfortunately the bottles sometimes explode, and this appears to be a considerable element of danger in their use.

Sparkling Wines.—These are wines which, like champagne (see p. 205), are made from unripe grapes, and bottled while the fermentation was still going on, and before all the carbonic acid gas has escaped.

This causes them to foam when uncorked, and gives them a brisk taste. The nature of the soil on which certain grapes grow is also an important factor, as instanced by the champagne district of France.

The grapes, however, require to be pressed immediately they are gathered, in order that the colouring matter may remain in the skins. After pressing, the *must* is put into casks, where it remains until fermented. Then a "cuvée" is formed, which means that different wines are mixed together, in order to obtain a larger number of bottles of one class. Now comes the filling of the bottles, each bottle receiving the addition of a certain amount of sugar in order to ensure within the bottle itself a second fermentation, developing carbonic acid and alcohol. The bottles are placed in the cellar in such a position that the sediment forms at the *bottom*. When this occurs, which requires several years, then the position is again altered in such a manner that the sediment leaves the bottom and forms on the cork, for which frequent shaking of the bottles is necessary. When the sediment adheres to the cork, then follows the concluding process of the wine, at which each workman has his special task. The "*degorgeur*" uncorks the bottles, by which the carbonic acid carries off the sediment; the "*opereur*" measures the dose, which means giving to each bottle the fixed addition of liqueur; the "*récouleur*" fills up the bottles with wine of the same sort; the "*boucheur*" recorks: the "*ficeleur*" ties the cork down with pack thread; and the "*ficeleur au fil de fer*" fastens on the wire. Each operation in the preparation of sparkling wines demands peculiar dexterity, for which reason in large factories the hands are specially trained. A chief point in the making of sparkling wine is the preparation of "the liqueur," the characteristic properties of the wine depending upon it.

This liqueur usually consists of old wine of some sort and sugar candy, which replaces the natural saccharine lost in fermentation, feeds the fermentation in bottle, and develops sufficient natural alcohol to produce spirituosity and carbonic acid gas. Each sort requires its special composition, the taste of the consumers and the price of the wine deciding the point. The preparation of the liqueur itself is professedly the secret of the manufacturer.

Sparkling Wines have, however, recently been artificially produced by the illegal use of an aerating machine for injecting carbonic acid gas into bottled "still" wines, and, while thus converting them into "sparkling," at same time evading the extra duty of 3/- per gallon.

Spatch-cock Rats.—A *spatch-cock* is a bird or fowl killed, split open, and dried, broiled, or grilled. In Canton and some other parts of China rats are treated in same way, and sold in the streets for edible purposes. Dried lizards are also used as tonic medicine or food. The manner of use is to boil them in water, and the concoction is then taken as a drink "to impart vigour and strength to the taker"; but the commonly received opinion that the Chinese, as a nation, habitually feed on rats and mice, lizards, etc., is quite erroneous. Water rats and cats are commonly eaten in Spain and Portugal. The French prefer frogs and snails.

Spear or **Garden Mint.** — F. *Menthe.* (See also *Peppermint.*)

This is the familiar sweet-smelling mint of our English gardens, used as a condiment, and one of the most useful of herbs.

It is identified botanically as *Mentha viridis*, and grows readily from cuttings, or divided roots, in almost any soil, but prefers a damp shady border. The term "spear" obviously refers to the elongated spikes which form the inflorescence. The handiest way of increasing the stock is to pull up small pieces when three to six inches long, and to dibble them in beds at 10 inches apart, after which these soon make fine bushes.

The green leaves are often chopped up in sauces and salads, also used for flavouring green peas, potatoes, and various summer drinks. It flowers in August, and is cut in very dry weather, just after the flowers have expanded.

Dried slowly and crushed into powder, mint is often bottled and sold for flavouring soups, forcemeats, etc., when or where the fresh green leaves are not to be had. The oil is also distilled and employed as a perfume by soapmakers in America. It is less pungent than that of the peppermint, and the yield of oil is less than 0·5 per cent.

Medicinally, it is a useful anti-spasmodic.

Prices of Dried.—German Spear Mint, 36/- cwt.; Cat Mint, 38/-; Balm Mint, 50/-.

(The common variety of wild mint to be found in our fields and gardens is a variety of *Mentha arvensis.*)

Spent Ginger.—See *Ginger.*

Sperage.—An old name for *Asparagus.* (See p. 61.)

Spermaceti. — Da. *Hvalrav;* Du. *Spermaceti;* F. *Blanc de baleine, Sperme de baleine;* G. *Wallrath;* It. *Bianco di balena;* Lat. *Adipocera cetosa;* Port. *Espermacete;* Rus. *Spermazet;* Sp. *Espermaceti;* W. *Anian morfach.*

A peculiar white, fatty, flaky, and brittle substance obtained from the head of the sperm whale, or cachalot (*Physeter macrocephalus*). This whale inhabits the Southern Ocean, is smaller than the common species, but has a proportionately much larger head, which is about one-third the size of its body. When the whale is alive the fat is in a fluid state, but after death much of it concretes into a crystalline form, and separates from the oil. It is then taken and purified by filtration and pressure into white, brittle, and insipid cakes, which are glossy, semi-transparent, soft, and unctuous to the touch, with a faint tallowy smell. Because of its more brilliant light and freedom from nasty smell, Spermaceti is largely used in

candle-making, but mostly in making ointments, salves, and cosmetics.

Apply to C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Spermaceti Candles.—(See also "*Candles.*")—These candles are highly prized on account of their beauty and illuminating qualities, and, notwithstanding their costliness, have been very largely exported to India. The spermaceti is usually mixed with 3 per cent. of wax or paraffin, to destroy its highly crystalline structure; it is moulded in the usual way, with plaited wicks that require no snuffing. Occasionally spermaceti candles are cast without any admixture of wax, the moulds being raised to a higher temperature, just as with stearic acid. Some manufacturers, in order to make the spermaceti appear like wax, use gamboge to give the desired yellow tint, and such candles are known as transparent wax.

Sperm Oil.—(Also called *Spermaceti*, *Whale Oil*, etc.)—One of the most useful of fluid oils, and consists of the liquid part of the fatty substance found in the head of the sperm whale, and certain other toothed cetaceans, such as the porpoise.

After being separated from the spermaceti, it is purified first with chloride of lime and oak bark, and finally with sulphuric acid. It becomes semi-solid at a temperature of 45° F., and is much purer than train oil.

Sperm whales are the richest prize of the ocean, yielding spermaceti from their brain cases, ivory from their lower jaws, and rich yellow oil from their sides.

A full-grown whale will yield 70 to 100 barrels of sperm oil, and about 24 of spermaceti. It is often used as a high-class lamp oil, and gives a very brilliant light without any nasty smell. It is also employed to lubricate delicate machinery.

On account of its high price, it is often adulterated, generally with seal oil, cotton, and mineral oils. These adulterants can be detected with zinc chloride. If pure sperm oil, a milky solution will be obtained; if adulterated with any of the above oils, a brown colouration will result.

Apply to C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Spice Balls or **Savoury Ducks.**—A favourite delicacy with the poor.

They are professedly made from pigs' lungs, scraps of meat, stale bread, or sausage meal, chopped onions, thyme, sage, pepper, salt, and cayenne, but "lights" from sheep and oxen are doubtless also used, and to which there need be no objection, but it has been asserted that diseased or "graped" lungs often find their way into the food market in this form.

Spiced Beef.—See page 86.

Spiced Vinegar.—(See also *Vinegar.*)—These usually consist of ordinary vinegar, either malt vinegar or acid vinegar, charged with the aroma of various spices, and then filtered and blended together.

Much depends on what the spiced vinegar is for. See the examples given under *French Beans*, *Mixed Pickles*, and *Pickled Walnuts.*

Spices.—Da. *Speceri;* Du. *Specerijen;* F. *Epiceries, Epices;* G. *Spezereien;* It. *Spezj;* Port. and Sp. *Especias;* Rus. *Pränüe korenja;* Sw. *Krydda.*

"Spices" is a general term embracing all those vegetable condiments which are hot, pungent, and aromatic to the taste and smell, whether employed for seasoning or flavouring food, and whether whole or ground to powder. They have been in use in all ages, and in nearly all climates, although they are chiefly the products of hot climates. We read that the Queen of Sheba presented spices in great abundance. "Neither was there any such spice as the Queen of Sheba gave King Solomon." The chief spice islands still belong to the Dutch, who once maintained the strictest monopoly of the produce. Birds, however, swallowed the seeds, and, in spite of Dutch laws to the contrary, took them to other islands, thus breaking down the exclusiveness, and

leading to a freer interchange of economic plants.

The most familiar forms of spices imported and sold in this country are peppers, carraway seeds, cardamoms, carvie, cassia, cayenne, cinnamon, cloves, cubebs, cumin, ginger, guinea grains, mace, nutmegs, pepper, pimento, vanilla, etc., all of which are described under their respective headings in this book.

Buying spices—especially ground ones—is, like buying essential oils and flavouring essences, largely a matter of confidence; but every parcel should be carefully examined to see that it does not contain partially exhausted or adulterated produce. The most costly kinds are often fabricated or mixed with wild varieties. Cinnamon, for instance, is commonly adulterated with the wild growths, also with guava bark (*Psidium guajava*). This latter dried bark is soaked in cinnamon water, re-dried, and both ends of the quill touched up with a little cinnamon oil to give flavour and odour, and the quills are then either passed off as cinnamon or mixed with the true spice. No grocer can afford to buy spices off any firm at any price, unless he has confidence in its strict integrity and competency. It is, however, in the ground or powdered state that dishonest grinders introduce wild and inferior species of the various spices, not to mention other foreign adulterants. It is impracticable for retailers to grind their own spices satisfactorily. They cannot afford a special mill for each kind, and to grind all in the same mill would, of course, mix the aromas and spoil them, no matter what trouble were taken to clean the mill. Several mills are, therefore, necessary for grinding these spices, as well as hemp, rape, linseed, etc.

Gardner's patent "Rapid" Sifter and Mixer, freely used for above. Prices from 50/- to £100. Catalogues from Wm. Gardner & Sons, Engineers, Gloucester.

A "*spice merchant*" is merely one who deals in spices in wholesale quantities. Spice millers and spice merchants have a lot more to answer for in the way of adulterations than ordinary retailers.

The principal spice auctions, except for cinnamon, are held at 12 o'clock on Wednesdays at the Commercial Salerooms, Mincing Lane, London. For many years the cinnamon auctions have been held quarterly, and they used to be quite an event among merchants, but cinnamon no longer has its old importance, and at present it is only the speciality of one or two brokers, and one or two dealers and importers.

General Spice Firms.—R. M. Curtis, 29 St. Mary-at-Hill, London, E.C.; W. & D. Harvest, Dowgate Dock, E.C.; Hedley, Gamble, & Crosfield (Spice Millers), Circus Street, Liverpool; Keen, Robinson, & Co., Limited, Garlick Hill, London, E.C.; Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool; Traill & Fletcher, Edinburgh.

Spike Oil.—True oil of spike is obtained from *Lavandula spica*, a native of Maritime Southern France, where its distillation is an important industry. "Spike" is a corruption of "aspic," the colloquial French term. Much of the commercial spike oil is little more than turpentine flavoured with the genuine "Essence d'aspic."

Spinach or **Spinage.**—F. *Epinards;* G. *S'pinat;* Port. *Espinafres;* W. *Y bigawglys.*

Spinach is the name applied to various plants, mostly *Chenopodiaceæ*, the leaves of which are eaten boiled. No practical method has hitherto been discovered of preserving this vegetable.

The chief plant (*Spinacia oleracea*) was unknown to the ancients, but was cultivated in the monastic gardens of the Continent in the middle of the fourteenth century. A French physician calls it *balai de l'estomac*—the broom of the stomach—because it is so rich in potassium nitrate (KNO_3), and so well cleanses and purifies that organ.

Some say spinach is a native of Spain, but there is a wild species growing in several parts of England, which is also cultivated in Lincolnshire, and considered the best.

The varieties of spinach most commonly used are the *round-leaved* or *smooth-seeded*, the *triangle-leaved* or *prickly-seeded*, the *strawberry*, the rapid-growing *New Zealand*, *Tetragonia expansa* (which really belongs to a distinct order—the *Tetragonieæ*), and the *Flanders* spinach, known by its large leaves, is by far the best for winter. They are all used in soups, and often boiled and eaten alone as vegetables. In season March to July. The *prickly* or winter spinach is in season October to February; but the *round-leaved* is the most succulent, and is used in spring and summer.

Spinach should be bright in colour, last well, and not run to seed early. The leaves should be soft, succulent, and not stringy.

Spirits. — F. *Spiritueux;* It. *Spirito;* Port. and Sp. *Espiritus.* (See also *Alcohol*, *Silent Spirit*, *Chinese Spirits*, etc.)

Spirituous drinks occupy a position between those things we consume for nourishment and those we consume for pleasure, but admittedly belong more to the latter than the former class, for the significance of alcohol as a source of nourishment for people in good health is extremely small; but, on the other hand, experience shows that matters may be very different in cases of illness. The easy oxidation of alcohol supplies heat and energy that cannot be so readily obtained from ordinary foods.

Distilled spirits receive various names, according to the materials from which they are derived. A number of spirits are produced from sweet fruits, cherries, plums, etc., and from the syrup obtained from the beet-root or the sugar cane. Spirit distilled from grape-mash, or from wine, smells of wine or œnanthic ether, and forms the true *Brandy;* spirit distilled from a malt or grain-mash smells of grain, and is *Whisky;* from a sugar cane mash, or from molasses, it smells like dilute butylic ether, and is termed *Rum;* from potatoes, smelling of fusel, *Potato spirit;* from cherries, smelling of bitter almonds, *Cherry Brandy* (Kirschenwasser or Maraschino); from rice, saps, etc., smelling like Russian leather, *Arrack;* from apple wine, smelling like quinces, the spirit is termed *Malac.*

Rectification consists in re-distillation, with the addition of certain chemical solvents, chiefly of an alkaline nature, which serve to attract and retain some or all of the objectionable matters at the bottom of the still, and so prevent them passing over with the new or second rectified product. The rectifier also reduces and adulterates at his pleasure (trying to imitate all sorts of foreign spirits) with logwood, nitre, burnt sugar, and other trash. A novel way of cleaning and maturing spirits has recently been introduced. The spirit, on being reduced to a temperature below freezing point, is sprayed in air, thus minutely atomising the spirit and exposing its largest surface to the action of the atmospheric oxygen. If successful, this curious treatment will upset many of the existing theories, and materially improve or *age* the spirit without loss.

In Germany four-fifths of the spirit distilled is from potatoes. (See *Potato Spirit.*) In England and Belgium rye is mainly used for the production of whisky and gin—with a little malt. In France brandy is the chief spirit distilled, and that is from either wine, yeast or murk, grape skins, etc.

Grog is a term thus explained:—The British sailors had always been accustomed to drink the allowance of rum "neat" until Admiral Vernon ordered those under his command to mix it with water. The innovation was unpopular, and the admiral (who wore a *grogram* coat) was for that reason nicknamed "Old Grog," a term which by degrees came to be applied to the mixed liquor which he ordered.

Of the adult population of this country, 93 per cent. take alcoholic beverages. It has been pretty well ascertained that the grocers only supply 5 per cent. of the total amount of spirits consumed in the United Kingdom!

It is a remarkable fact that the manufacture of spirits or spirituous drinks is forbidden by the Mohammedan faith,

and the tenet appears to be universally observed.

"Proof Spirit" is a term in constant use, but, as few know its meaning, it may, therefore, be explained here that it is a diluted spirit, and was defined by Act of Parliament (58 George III.) to be such as shall, at the temperature of 10°·0 (51° F.), weigh exactly twelve-thirteenth parts of an equal measure of distilled water. Its specific gravity at 15°·5 is 0·91984. The "proof spirit" of the British Excise contains 50·8 parts by weight of absolute or pure alcohol to 49·2 parts of water. Ordinary brandy, whisky, rum, and gin contain between 40 and 50 per cent.; wines, such as port, sherry, Madeira, etc., 10 to 20 per cent.; and malt liquors, beer, porter, ale, etc., from 4 to 8 per cent.

In this country brandy, whisky, or rum must not be sold weaker than 25 degrees under proof without a special declaration of the strength. Gin must not be sold under 35.

Spirits improve greatly with age, and should always be seven or eight years old before being used as drink. There are varieties of alcohol, and not one only, and the impurities in them are matters of great importance. Good liquor, well matured, does not produce the terrible effects of the cheap, vile, and impure spirits sold mostly in low, rough neighbourhoods. The sellers can, therefore, only be regarded as accessories to the moral degradations which ensue.

"The maximum amount of alcohol," says Parkes, "that an average man can take daily without injury to his health is that contained in 2 ozs. of brandy, quarter-pint of sherry, half-pint of claret, or 1 pint of beer."

Dr. Richardson considers the most deleterious effect of the "nightcap" is the extra work it gives to the heart. He says—"When I lie down at night without any alcohol, it is rest that my heart gets, but when you take your wine or grog at bed-time you do not allow that rest, for the influence of alcohol is to increase the number of strokes, or pulsations, of the heart, and, instead of getting this required rest, you put on something like 15,000 extra strokes, and the result is that you rise up very unfit for the next day's work till you have taken a little more of the 'ruby bumper.'"

Spirits of Camphor.—Lat. *Alcohol camphoratus.* (See *Camphor.*)

Spirits of Hartshorn.—A solution of Ammonia, or simply *ammonia water.* (See *Hartshorn.*)

Spirits of Sweet Nitre.—This is much the same thing as *nitrous ether*; but, as sold in the shops, the spirits of nitre, or "*Sweet Nitre,*" is nitrous ether much reduced in strength, and is, in fact, often found much below the strength required by the British Pharmacopœia. It should contain 1·75 per cent. of nitrous ether. This weakened product is not permissible, not even when replaced by excess of rectified spirit. Spirits of nitre and nitrous acid should really be of the same strength. Water is the chief adulterant to guard against. It keeps best in small, dark amber-coloured vials, stored in a dark, cool place. If opened often the strength evaporates.

Spirits of Wine.—F. *Esprit de Vin*; Port. and Sp. *Espiritu de vin.*

Spirits of wine, Methylated spirit, Rectified spirit, Silent spirit, Potato spirit, and Alcohol are all much the same thing—that is, more or less pure spirit which may have been obtained by distillation either from the liquor of fermented vegetable matter, grain, or fruits, or from brandy, whisky, gin, wines, etc. In other words, they are all spirits that have been distilled a second or third time to purify them.

Split Peas.—F. *Pois cassés.* (See *Peas.*)

Sponge Biscuits.—Very good ones are made by adding the whites and yolks of 12 eggs, previously well beaten, to 1½lbs. of finely-powdered sugar, and whisking until it rises in bubbles; then 1lb. of the finest pastry flour is added, and the grated rind of two lemons. It is then divided and put into shapes, a little sugar sifted over them, and baked

in buttered tin moulds for nearly half an hour in a moderately quick oven.

Sponges.—Ar. *Isfenj;* Da. and Sw. *Svamp;* Du. *Spons;* F. *Eponges;* Ger. *Schwamme;* It. *Spugna;* Per. *Abermoordeep;* Port. and Sp. *Esponjas;* W. *Yopwng.*

These porous marine bodies are found adhering to rocks, shells, etc., under water, and on rocks about the shore at low water.

Simmonds gives the sponge fisheries as follows:—

	Value.
West Indies	£120,000
Mediterranean	£150,000

The quantities imported into Great Britain were:—

1840	78,000 lbs.
1855	474,000 ,,
1870	840,000 ,,

No returns since 1870.

Biologists differed until very recently as to whether a sponge was a vegetable, a living animal, or merely the fibrous house made by a colony of animalculæ; but it has now been definitely proved that they are animals in which currents of water enter and leave the body after traversing a more or less complicated system of canals, and that this body is supported by a skeleton. They contain no cellulose, and require organic food. They also possess a rudimentary nervous system, which enables them to close the pores and to suspend the processes of inhalation and inhibition. When the sponge is in the sea alive, the inside of the pores is covered with a soft substance like the white of an egg. This appears to be the flesh of the animal, and currents of water may be seen running into the sponge through the small pores, and out of it through the large ones; and it is supposed that, while the water is passing through the sponge, the nourishment requisite for the support of the animal is extracted from it.

In fact, the spores or seeds are small gelatinous bags with the power of swimming in the sea; afterwards, they attach themselves to rocks, and appear to grow into a mass covered with jelly, and furnished with minute inhalent pores that suck in the sea water, also with one or more larger crater-like openings at the top, through which it is again expelled.

Sponges are of endless variety, shape, and size, but only three or four kinds are met with in commerce; two of them (known as the *toilet* and *honeycomb*) being brought from the Levant, and one (known since 1842 as the *Bahama* or *bath sponge*) from the West Indies.

Some two hundred and fifty thousand pounds come to us from the Bahamas, but they are large, coarse, and often of very little value. Cuban grass sponges are generally to be had at 6d. to 1/- a dozen.

These Bahama sponges are of a coarse texture, and not to be compared with those from the Mediterranean. The industry is a very interesting one. The shallow water is of light, sparkling, green colour, the day hot, and not the slightest swell or undulation of the water. One man, using a sea-glass or water telescope, peers down into the water in search of sponges; the bottom is of snow-white sand. When hooked up, and the small boat is loaded—a task of some 4 or 5 weeks—the boat hastens home to Nassau, the capital of the Bahama sponge industry. The sponges are then taken out and placed along the shore. They are piled up in "crawls"—that is to say, pens, or enclosures, of stakes and hurdles, which are placed between high and low water, and so as to be fully exposed to the rushing, cleansing movement of the tides, whose ebb and flow at last washes away the animal matter adherent to the sponges.

The sponges are next carried to the Sponge Exchange, where the sorting is done and the sponges are sold. They are then conveyed in peculiar-looking sponge carts to the sponge yard, where ebony-faced females dress them. The sponges are now ready for pressing in a machine and packing for export.

During nine months in the year the Bahama sponge fishery provides employment for large numbers of men and boys, and over 500 small schooners are engaged in it. The vessels are usually owned by capitalists, and the procee ls

SPONGES—(continued).

of a voyage are divided into a number of shares, which are distributed, in varying proportions, between owner, captain, and crew. A voyage usually lasts from six to eight weeks, and is frequently very profitable to all parties. Small schooners have been known to come into port after a six weeks' voyage with sponges worth from £300 to £400. The sponges are sold by auction in the Exchange at Nassau, and are chiefly purchased by agents for firms in New York.

Immense quantities of similar sponges have also been coming from Florida since 1852.

Hundreds of acres along the Gulf coast are devoted to sponge farming. The site usually chosen is a creek, into which the salt water flows freely. The process is very simple. It is only to drop into the water stones and other substances for sponges to fasten themselves to, and then to dam up the lagoon so that the sponge seeds shall not be blown out to sea. The farm requires little attention when it is once started. The seeds were at first obtained from the Fish Commissioners, but lately they have come direct from the sponge fisheries. In the autumn the farmer buys a seed supply of sponges, taking care to get both the male and female cells. During winter the sponge seeds are usually kept in small enclosures, where they develop. The spores are liberated early in spring. They swim about, the eggs grow rapidly, and soon attach themselves to the rocks or coral under water. The sponges grow slowly, and are rarely pulled until the end of the third year; and then only the largest are gathered, the smaller ones being left to produce new seeds and grow larger.

On the Florida Reefs the sponge fishing has lately been very successful. The best qualities are called "sheep's-wool" or Rock Island, are found in beds between Anclot Keys and St. Marks, off the coast of Apalachicola, and are caught with hooks, on poles 10 to 40 feet long. Dredging and diving are now prohibited by law, also the taking of sponges less than 4 inches in diameter. Six or seven years ago strangers to Florida endeavoured to catch sponges by diving, but the plan turned out a failure. There is another kind called "Key Sponges" found on the Florida Reefs from Key West to Cape Florida, on the east coast, extending about 175 miles, but these are a very inferior quality, taken at a depth of 4 to 12 feet. In other regions sponges are obtained by various means, either by fishing them up with a pronged instrument, as by the Greeks in Morea, or torn off the rocks by divers, often let down as deep as thirty fathoms into the sea by a rope with a heavy stone at the end, from the boats, or "caiques," as in Asia Minor and Syria.

They must be thoroughly dried before they are packed, or they will develop orange-coloured spots, which the Greek fishermen call "sponge cholera."

On the coast of Syria 300 boats, with about 1,500 divers, pick up annually sponges worth £25,000; best worth 40/-, inferior 4/- per lb. Depth, 30 to 150 feet.

The Tunisian sponge, known in the trade as *gerbi*, is of good quality, and especially the kind found on the coast of Algeria.

Smyrna is the chief market for Turkey sponges, collected around the islands of Symi, Calymnos, Halki, Mandruha, Crete, and Zoharia, and from one to five thousand pounds of these are imported yearly.

The coast of Tripoli has since 1885 been found very rich in sponges. The female sponges being very numerous in the deep waters about Malta, although not equal in quality to those of the Archipelago and other parts of the Levant. Tripoli catches realise about 33,000 yearly. The sponges are of a reddish-brown colour.

When first gathered, sponges are a dark coloured, sticky, and jelly-like substance, not much unlike ox liver, but with a framework of tough fibre. In curing them they are usually buried in dry sand for a time, until the jelly decays, then put into wire cages in seawater, and washed clean. This leaves them so light that they are moved about by the slightest breeze. Sand is afterwards purposely introduced, by stringing

together the cleaned sponges and laying them on the sands, so as to allow the ripples of the sea to slush them with the finest particles.

Black Sponge. — The male sponges, black in colour, are worthless, and even after special chemical treatment, of very little value, their inferiority being owing to the sterile character of the sea-bed and lack of the proper nutriment necessary for the production of the superior or female sponges.

Sponges being sold wholesale by weight often contain an excess of sand, and this gives rise to endless wrangling and disputes among importers and traders as to the right to sift and beat the sponges; even the number of minutes to be employed in doing so, and the length of the stick used, are frequent points of contention with the sponge merchants. Sometimes they are fraudulently loaded with glycerine and solution of silicate of soda to the extent of 25 per cent.

Sponge is now found useful in many commercial purposes, the refuse and clippings being of service for instance in steam-valves and in the manufacture of a felt which is laid under carpets.

White or bleached sponges are those which have been soaked in either dilute hydrochloric acid or sulphuric acid, and afterwards well washed, but more often they are treated successively with solutions of permanganate of potash, oxalic acid and sodium hyposulphate.

They look pretty, but the acid undoubtedly injures the quality. The cheap white sponges sold by hawkers are often the refuse sponges thrown away by hospitals, and afterwards recovered and blanched with acids.

The market value of sponges, however, chiefly depends on the *fineness of the pores.*

After prolonged use, bath sponges lose their elasticity and softness, and should be restored by dipping them into a mixture of 1 part (by measure) of glycerine and 8 parts of water, finally pressing out any excess of the liquid, and allowing them to dry.

Soap very soon spoils a sponge unless it be quickly washed out well; in fact, after use, all sponges should be put in a wire basket or hung up in a current of fresh air, or near a stove, and not left in the soap dish, nor in any moisture.

Sponges which have become slimy and unpleasant to the touch, sour or malodorous, through not having been squeezed out as dry as possible immediately after use (and when this has once commenced it increases rapidly), should be soaked for a day or so in two or three waters, in which a lump of soda has been dissolved, and squeezed out (not wrung) a few times in each water; or a simpler and, perhaps, equally effective plan is to soak them a few hours in salt and water, and then thoroughly dry them.

Sprats.—These small fish, also known as *Scotch Garvies, Kilkies, Whitebait,* etc., although not young herrings as often imagined, belong to the same family, and are classed as *Clupea* (or *Harengula*) *sprattus.*

A little examination will, however, at once show important differences. The sprat has what its captors call a "sawbelly," *i.e.*, with a row of spine-like projections which are wanting in the herring, and the position of the ventral fins is also different. Another easily observed distinction is the want of axillary scales to the ventral fins which are common to both the herring and pilchard. The arrangement of the teeth, too, is different, and the late Mr. Frank Buckland waxed enthusiastic over the sprat's mouth. "It looks a little tiny mouth not large enough to admit a pin's head, but just push down the lower jaw, and what do you see. Why, one of the most beautiful insect nets it is possible to conceive. A net into which you can get the top of your little finger, and of necessity terribly destructive among the minute sea creatures which the sprat feeds on." Indeed, the mouth of the fish has furnished its captor with a pattern for the net wherewith it is itself caught, and which it closely resembles. It is only quite recently that the mode of reproduction has been discovered, but it has now been proved beyond the shadow of a doubt that the eggs are pelagic like those of the pilchard, and float in the sea and are

SPRATS—(continued).

hatched in that condition. Both at Plymouth and on the German coast the eggs have been taken from the ripe female sprat, and proved in all respects identical with floating eggs obtained from the surface of the sea. The fish repair to the deep water for the purpose of spawning, and at the time they come inshore the roe has the appearance of imperfect development, which probably accounted for their being taken for young herrings. No doubt at an early stage of their existence sprats, as well as young herrings, not unfrequently pass muster as whitebait. While sprats are numerous in the Firth of Forth, and are well known as "garvies," or "garvie herrings," they are rather uncommon on the Irish coasts.

In the time of Henry VIII. they were esteemed Royal fish, and were always served at the King's table during the season, while, as every Londoner is aware, the first sprats taken in the Thames belong of ancient right to the Lord Mayor.

They are found in immense shoals on many parts of our coasts during the latter part of the year.

The "spratting" season is from November to March; the fishery on the East Coast commencing the last week in October or the first week in November, the dark and foggy nights which usually usher in November being especially favourable to large hauls. Two methods are employed, the drift net and the stow net, the former being chiefly used in the deeper waters from Ramsgate to Hastings, but the moored stowboat in the tideway captures all sorts and sizes, not only of sprats but young herrings and whitebait. The net is peculiar, a sort of long narrow funnel, having a square mouth, and with a mesh of varying size. When in the water two wooden spars are fastened across the mouth to keep it open, and by an ingenious arrangement the lower side of the mouth is attached to the anchor, the spar at the upper side being secured by ropes to the sides of the boat. Both boat and net being secured by the same anchor, the depth at which the net is to work can be regulated by the ropes attached to the spar on the upper side of the mouth of the net. Fishing continues until the tide is getting slack, when by means of a small chain attached to the centre of the lower spar, and running through an iron ring in a corresponding position on the upper one, the two are brought close together, thus closing the mouth of the net, which is then hauled on board and emptied of its contents. A full-sized sprat will measure quite six inches in length and somewhat over an inch in depth; the ventral fins arise in a vertical line under the first dorsal fin, thus marking another point of difference between them and the pilchard and herring, in both of which the ventral fins begin under the middle of the dorsal fin. Young sprats, when only an inch or two long, form the famous *whitebait* of autumnal renown. They may easily be distinguished from young herrings, pilchards, or shad, by the sharply notched edge of the abdomen. When gutted, coloured, and pickled they are frequently sold as anchovies, or pounded and made into a cheap imitation of "Anchovy Paste," with salt, saltpetre, sal prunella, and red colouring matter, but if bottled *whole* they are easily recognisable by their shape.

Sprats are often remarkably abundant, especially at the mouth of the Thames, off the coasts of Suffolk, Essex, and Kent.

Although the shoals were much more prodigious sixty or seventy years ago at Brightlingsea, East Swale, Burnham, Margate, they are now frequently sold as manure at about 1/- per cwt.

They are often cleaned and cured by being soaked in brine and finally dried, or smoked, for sale in small bundles of 30, or put into small wood boxes. At Yarmouth and Gravesend they are cured like red herrings. The *Kilkies* brought from Riga and other Baltic ports are really only sprats cured with spices, etc.

Sprats are considered to be excellent substitutes for sardines, and there have been established factories for preparing and tinning them, in imitation of the more expensive *Sardines à l'huile*. Right or wrong, there has been no secrecy in the matter—there hardly could

be when there are hundreds of people employed. This business is centred at Deal and Walmer on the south coast. They are sold cheaper than the genuine sardine, and for that reason are popular, not only in the more humble households here, but also in France, where, in fact, there is a brisk demand for them.

Spring Salads.—See *Salad Plants*.

Spruce, Spruce Beer, Spruce Essence.—*Essence of Spruce* is properly prepared by boiling the leaves, small branches, and young shoots of the black spruce fir (*Abies nigra*) in water, and evaporating the decoction to the consistence of treacle. That imported from Dantzic is considered the best, but there are also poor and even spurious qualities.

Spruce Beer, or *Black Beer* as it is also called is supposed to be a valuable antiscorbutic. It is very popular in Sweden, Norway, and Denmark, where it is made by boiling the leaves, rind, and branches of pine trees, but in England it is prepared in many ways:—

1. By boiling the shoots, tops, bark, and cones of the Scotch fir, *Pinus sylvestris*, when the fluid extract is made either white or brown, according as sugar or molasses is employed in the making.

2. Warm water, 5 gallons; spruce essence, 4 ozs.; sugar or golden syrup, 8lbs. Mix well, adding when lukewarm ½ pint yeast; let it work three or four days, and then strain and bottle.

3. Put into a common soda bottle about 30 grains of bicarbonate of soda, 10 drops of essence of spruce, and about 30 grains of crystallised tartaric acid. Fill the bottle quickly with spring water, cork, and secure with twine or wire.

4. *Essence of Spruce* is often made from ½ oz. oil of spruce, 1 oz. magnesium, 8 ozs. alcohol, and 8 ozs. water. Dissolve the oil in a little of the spirit, and rub in a mortar, with the other ingredients.

5. *Powders for Spruce Beer.* — 100 grains of white sugar, 24 grains of sesquicarbonate of soda, and 10 grains of spruce essence. Mix well and fold in *blue* paper; then in a *white* paper put 30 grains of either tartaric or citric acid. Dissolve these powders in separate glasses of water. Then mix, and drink while effervescing.

6. The fishermen of Newfoundland, Labrador, and the Gulf of St. Lawrence drink large quantities of spruce beer. A few black spruce branches are chopped in small pieces and put into a pot with 6 or 8 gallons of water and boiled for several hours. The liquor is then strained and put into an 18 gallon cask. A gallon of molasses is added; a pint of the grounds from previous brewings and a few hops if at hand are also put in, and the cask, filled up with cold water, is left to ferment. It is fit to drink in 24 hours. (See also *Mum*.)

Sprue.—See *Asparagus*.

Squari Nuts.—See *Suwarrow Nuts*.

Squashes.—The squash is a species of gourd plant (*Cucurbita melopepo*), differing from most others by growing in the shape of a bush instead of running along the ground. The fruit also is of flat irregular shape, hence one variety is known as the "Elector's Hat," another as "Turk's Cap." The squash is regarded as one of the best gourds, and is mostly grown in North America.

The name "squash" is now also applied to various cooling beverages extracted from fruits.

Squills.—F. *Scille Oignon de Mer*; G. *Meerzwiebel*; It. *Cipolla Squilla*; Lat. *Radix scillæ*; Sp. *Cebolla Albarrana*.

The sliced bulbous roots of a kind of wild hyacinth or blue-bell, *Urginea scilla*, growing on the shores of the Mediterranean. There are two varieties—red and white—which are said to be alike in medicinal value, though the white squill collected in Malta is preferred in England, whilst the red squill collected in Algeria is used in France. The bulbs or pear-shaped droops vary in size from an orange to a child's head, and when fresh abound in a viscid juice, which is very nauseous, intensely bitter, and acrid, causing inflammation when rubbed in the skin.

Vinegar of Squill is made of bruised

squills, acetic acid, and water, with a little spirit.

Oxymel of Squill is made of vinegar of squill and clarified honey.

Syrup of Squill consists of a pint of vinegar of squill dissolved in a little heat, with 2½lbs. of refined sugar.

Squill is considered a useful diuretic and expectorant, and also useful in chronic dropsy, bronchitis, etc.

Stachys. —See *Chinese Artichokes.*

Star Anise.—F. *Anis étoilé;* G. *Sternanis;* Lat. *Semen badiani.* (See also *Badian.*)

The aromatic and carminative fruit of the shrub *Illicium anisatum*, one of the *Winteraceæ*, and native of China and Japan.

It is extensively cultivated in Kwangsi and Tonquin, but is not known to grow elsewhere. The capsule is star-shaped, and contains eight follicles or carpels, each of which ends in a straight point and has a single brown shiny seed. These seeds yield on distillation about 4 per cent. of a volatile essential oil, known as *Star anise oil*, with the odour and flavour of aniseed or of fennel. It is used in China as a condiment and spice, and in Europe to flavour liqueurs.

Star Anise has been largely substituted for the true anise (*Pimpinella anisum*) in flavouring Dutch aniseed and *Anisette de Bordeaux.* The Japanese burn the seed as incense in their temples and over the tombs of relatives.

Japanese Star Aniseed of the species *Illicium religiosum* (*I. anisatum*, Linn.) produces a very poisonous fruit which the Japs call "*Skimmi.*" Enormous quantities of this are sent from Japan to China every year, but it is only at Shanghai that any distinction is made between the true star aniseed and its deleterious adulterant.

Hong Kong, Pakhoi, Haifong, and Tonking are the chief ports of shipment from China.

Star Apple.—The fruit of the West Indian *chrysophyllum cainito.* It is like a berry, but as large as an ordinary apple. It is edible and very pleasant to the taste. When cut transversely in two before it is ripe, the inside shows the figure of a star, hence its name.

Starch. — F. and Port. *Amidon, Fécules;* G. *Stärke, Starkmehl;* It. *Amido;* Lat. *Amylum;* Rus. *Kruchmal;* Sp. *Almidon;* W. *Syth, Startsh.* (See also *Rice Starch.*)

Starch is a white, soft, glistening, but insipid vegetable substance, universally present in greater or lesser proportions in all vegetable substances, but the chief commercial sources of supply are rice, maize, wheat, and potatoes. In France commercial starch is made from horse-chestnuts, and in India, China, etc., large quantities are made from sago and exported to Europe. (See also *Chinese Starch.*)

Maize Starch is extensively manufactured in Oswego, Glen Cove, and New York, and is obtained by mechanically separating the husk and germ, which contain the gluten, albuminoids, and oil, from the white starchy portion, any gluten retained in this being removed by washing the powder and straining through a fine sieve. *Rice Starch* is mostly made in England, and *Wheat Starch* at Belfast.

Rice contains about 84 per cent. of starch; maize, 81; wheat flours, 56 to 72; haricot beans, 50; rye, 70; potatoes, 12 to 18.

As found in commerce starches are fine, white, inodorous powders, or in masses of irregular shape which are readily reduced to powder.

Starch is composed of 43·48 per cent. of carbon, 49·45 of oxygen, and 7·06 of hydrogen. Potato starch is more friable, and is composed of much larger grains than wheat starch, also forms a jelly with water at a lower temperature. There are of course several methods of producing starches, the chief object being to remove the gluten.

One way is to mix the flour with water, and allow it to ferment slightly, when the acid formed dissolves the gluten.

Potato Starch. — A large amount of starch is obtained from potatoes, which yield on an average about 16 per cent. of their weight.

The first operation in making starch

STARCH—(continued).

from potatoes is to thoroughly wash the tubers, after which they are reduced to a pulp in a rasping cylinder or comminutor.

The pulp falls from the rasper on to a starch separator, the bottom of which consists of wire gauze having thirty meshes to the inch.

This separator is slightly inclined, so that the shaking process gradually moves the pulp towards the lower end. The starch separator is of the same width as the rasps, namely, about thirty-six inches, and is twelve feet in length. During the progress of pulp along the separator, jets of water are thrown upon it from pipes arranged above. The water detaches the starch granules from the pulp, and the granules, being small enough to pass through the meshes of the gauze, are carried through, while the pulp is left upon the screen, to be ejected finally at the lower end.

The starch, when it enters these tanks with the water, rapidly settles to the bottom, and the reddish-coloured supernatant water can be drawn off. In a few hours after the tank is filled the starch is all settled in a hard, compact mass in the bottom of the tank. The proportion of starch and water is such that a four-inch layer of starch will result from a quantity of starch milk which would fill the tank. In other words, four inches of starch are overlaid with about six feet of water.

The crude starch resulting from the above process, after the water is drawn off, is lifted by shovels and thrown into another tank of somewhat smaller size fitted with a revolving stirrer; water in large quantities is added at the same time, and the starch is beaten into a cream and again allowed to settle. This process is simply for washing the starch and removing the larger portion of impurities. In the second settling the pure white starch first goes to the bottom, and when the water is drawn off it is found to be covered with a thin layer of starch mixed with various forms of impurities. This layer is removed separately, and the pure starch underneath is ready for the drying tables.

The white starch derived from the process just described is dried in kilns of two kinds. The old-fashioned kilns were heated directly by furnaces, the hot air coming from the pipes being used to dry the starch. In the modern kilns the drying is effected by means of steam coils. These permit a more uniform and more rapid drying, and at the same time diminish the danger of fire, which is very great in the kilns heated directly by furnaces.

After a few hours' drying the large blocks of wet starch fall down in smaller portions on raking, and these smaller portions fall through the slats, and are caught upon the shelves below. Thus, little by little, the starch which is raked through the shelves becomes drier and drier, and is brought into contact with the hot air.

In this way the starch granules are protected from swelling and conversion into a pasty mass, as would otherwise be the case if they were subjected in the wet state to the full temperature of the final drying.

It requires about twelve hours to complete the drying when the most effective kilns are employed, so that kilns are charged with the wet starch, as a rule, twice a day.

The dried starch is finally raked off the lower floor into a trough along the side of the kiln, whence it is placed in barrels. In some of the steam kilns the drying is accelerated by a blast produced by a blowing fan. The cold air, before being forced into the kiln by the fan, is passed over a series of iron tubes filled with cold water, which takes from the air a considerable proportion of moisture which otherwise would enter the kiln.

The wet starch in lumps of various sizes is transported over a bridge connecting the kiln and factory, either on a small railway or, more often, in wheelbarrows.

After the starch is thoroughly dried, it is carried to the warehouse, where it is placed in heaps, in order that the moisture may be evenly distributed throughout the mass.

Potato starch has peculiar properties and advantages over corn starches. The makers of prints will pay higher prices for it, and it is used in the manufacture of cotton, woollen, linen, and silk goods for three distinct purposes. (1) Sizing for the warp yarn before it is woven. (2) Bleaching, dyeing, or printing. (3) In the form of dextrin or roasted starch as a thickener or vehicle for applying the colours to a fabric.

Wheat and barley starch used to be made in a similar way by washing the crushed grain or flour with water until all the white colour was got out of it, letting this settle, and then pouring off the water, and drying the sediment; but in 1840 Orlando Jones patented the method for separating it by dilute caustic potash, and this acting equally well on rice and maize, these latter have superseded wheat in starch manufacture. Blue colouring is often added so as to produce *blue starch*. Chemically, all the starches are alike, but while the microscope shows them to consist of small, round, or oval grains, each description is readily distinguishable by its form, size, and marking. The granules of the potato are over three times the size of wheat, and ten times larger than the grains of rice starch.

When sufficiently boiled the tough coverings of these little granules burst, and the contents swell out into thick jelly, and in fact this is really the reason why beans, rice, and other grain swell out so much when cooked.

Cold Water Starch.—This is made by boiling the starch under very high pressure during manufacture, which renders the starch afterwards soluble in cold water, and this with the heat applied during the process of ironing suffices to produce the stiffness required in ordinary linen.

The *Berlin Prepared Brilliant Dressing Starch* is wheaten starch mixed with 2 to 2½ per cent. of borax.

A so-called *Finest Brilliant Elastic Starch* is a mixture of 7 to 8 parts of stearine, with 100 parts of wheaten starch. (Melted stearine may be mixed with about 15 times its weight of starch, and, after cooling, powdered and combined with the rest of the starch.)

In the sixteenth and seventeenth centuries the starch used for ruffs, cuffs, etc., was frequently coloured, and *yellow* starch was at one period extremely fashionable. *Blue* starch was first affected by the Puritans. The duty on starch, exacted under a very severe penalty, was repealed in 1834 by 4 and 5 Wm. IV., cap. 77.

The uses of starch are many. It is employed largely for laundry purposes, for the sizing and stiffening of cloth, as an adhesive agent, and for the manufacture of dextrin or British gum. It also enters largely into the composition of toilet powders, and is extensively employed for the sophistication of foods and drugs.

Of late years there has been a great preference shown for starch in fancy boxes with pictures on. When will the retailer show the consumer that a pound of loose starch at 4d. is quite as good as a box at 4½d. or 5d.?

How to use Laundry Starch.—Mix 1lb. starch, 2d. borax, 2d. glycerine, 1d. turps, in a gallon of water. Use as needed. Do not throw the water off the starch from time to time. Starch made and kept for some time is much better than when used immediately after being made.

Apply to C. Mason & Co., starch importers, 8 Orwell Place, Ipswich; Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool; R. Lehmann & Co., Ltd., Peninsular House, Monument Street, London, E.C., telephone, No. 1430 Avenue; telegrams, "Lehmann, London."

Starch Glaze, Starch Gloss (*Starch Enamel, Glazing Paste*, etc.).—There are many of these compounds under various fancy titles, but Refined Borax is perhaps as good as any of them, one part of spermaceti in powder may be added to 7 parts of the borax.

A fair quality is made in the following proportions:—

1. 10 ozs. borax, 20 ozs. starch, ½ oz. stearic acid, and 6 dr. of absolute alcohol. Dissolve the acid in the

alcohol, and then mix with the starch; expose it to the air till dry, then add the borax, and finally sift it well.

2. 1¾ ozs. each of spermaceti, gum arabic, and borax, 4 ozs. glycerine, 1½ pints of distilled water, and a little perfume.

This mixture is made with or without the addition of starch; if mixed with starch, about 4 tablespoonfuls of the gloss is to be added to 4½ ozs. of ordinary boiling starch.

3. 1 oz. best paraffin wax and 2 scruples or 40 drops oil of citronella. Melt the wax and stir in the oil. Then cool. (Instead of paraffin wax, 3 parts of stearin and 1 of spermaceti may be used.)

4. 1 oz of gum arabic and 10 ozs. water. Crush the gum and cover with boiling water. Let it stand 12 hours, stir up again, and when the dirt has settled pour off and bottle the clear gum.

5. Saturated solution of borax 2 parts, mucilage of gum tragacanth 1 part, and mucilage of gum acacia 1 part.

6. Powdered borax, 3 ozs.; paraffin wax, 2 drachms; dextrin, ½ oz.; potato starch, 6½ ozs. Melt the paraffin and pour it upon the mixed powders in a mortar. Rub well till a uniform mixture results.

7. An excellent *starch enamel* is made from powdered pumice stone and scented soap, about half of each.

Starch Gloss Powders are very simply made:—

1. One part of powdered stearin, 18 of starch, 1 of powdered borax. Mix.

2. Two parts of powdered soap, 1 of powdered borax, and 3 parts of French chalk. Rub the powder over the surface of the linen with a dry flannel, and then iron in the usual way.

3. Boric acid, 5; borax, 3; stearin, 1; white wax, 1. Heat together with sufficient caustic soda solution to give a clear solution, then evaporate to dryness. Powder and mix with fine starch powder in the proportion of 1 to 10. This mixture evaporated until a little sets firm, and then run into moulds, may be used in the block form.

Starch Gloss Tablets are easily made by mixing 5 parts of stearin with 2 parts of Japan wax.

Stearin and hard paraffin melted together may also be used.

Starch Improver.—Powdered Epsom salts, say, a teaspoonful to each bowl of starch (dissolved by boiling), also renders the clothing fireproof to a certain degree.

Special Manufacturers.—H. May & Co., Limited, Goodinge Road, Islington, London, N.; Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool; R. H. Poole, 126 Witton Street, Northwich, Cheshire; Punch Polish Company, Hick Street, Birmingham (F. Cooke, Proprietor).

Redford's China Starch Gloss ("Pigtail Brand," registered trade mark) glosses linen just like china. Samples and trade terms, with advertisement matter, from Redford & Son, Liverpool, E.

Gardner's patent "Rapid" Sifter and Mixer, freely used for above. Prices from 50/- to £100. Catalogues from Wm. Gardner & Sons, Engineers, Gloucester.

Starch Gum, Sugar or **Syrup.**—These are terms often used for glucose, grape sugar, dextrose, and other capillary syrups. They are all much the same product, however obtained. The sweet syrupy substance is now mostly produced in America from maize which is treated with hydrochloric and oxalic acids.

A watery syrup of similar appearance is made in Germany from potatoes, but this, being obtained by the use of sulphuric acid, generally contains objectionable traces of it.

Starch Polish.—This may be made by melting and mixing 16 parts of lard and 1 part of white wax till like cream, then adding 1 part of best glycerine mixed in 2 parts of strong solution of ammonia. It is often slightly perfumed with essence of lemon or other scent.

Starch Sugar.—See *Glucose, Grape Sugar, Dextrose,* etc.

Stearine.—This is a hard crystalline substance, dry, and free from greasiness, and of a pearly lustre. It is really the solid constituent of all fatty substances after the oleine or fluid fat is pressed out, but is most abundant in mutton suet, and is insoluble in cold alcohol. It seems to be composed of stearic acid and glycerine.

Lard Stearine is the residue left after the expression of the oleine from lard. Stearine is largely employed in candle-making. The value of first quality distilled, say, 120° to 127° M.P., is 37/- to 42/- per cwt., and of saponified, 129° to 130°, 42/- to 48/- per cwt.

Apply to C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Sterilised Foods.—A new process of preserving meats is simply to sterilise the meats by placing them for a certain number of hours close to an electric light. The actinic rays of light not only from an electric light, but from almost any kind of light, are known to be fatal in time to all kinds of germs, even the bacteria of anthrax. While the meats are exposed to the light, a stream of hot air, at temperatures ranging from 115° to 150° F., is sent up through the box in which the meats are placed to dry them. Then the thoroughly dried meats are powdered, and are thus ready for use. The weight of a beefsteak dried in this way and powdered is about 30 per cent. of the original weight. The same method is said to be feasible for fruits, milk, fish, oysters, eggs, and, in fact, almost any kind of organic food of a kind that will not keep of itself. Milk, when subjected to the electric light, divides into its three chief components, a layer of water forming at the bottom of the bottle, casein above that, and oil at the top. The two main objections to the process are declared to be the rather unrelishable products obtained, and the fact that what the electric light could do in the way of sterilising was but one-eighth as great as the similar power of sunlight.

Sterilised Milk.—(See also pp. 474 and 598.)—As milk in its natural state is subject to a rapid fermentation, people have tried these last few years to preserve it by destroying the organic ferments which it contains by means of a sufficient heating, followed by a quick cooling. This method, due to the scientific researches of Pasteur, has two drawbacks—(1) It gives to the milk a burnt taste, and (2) it increases the selling price very considerably. Milk which has undergone this process, and which must be kept air-tight in order to retain its goodness, is sold under the name of sterilised or pasteurised milk; and some people say it is the only safe kind of milk to use during summer, because of the great number of cows afflicted with tuberculosis (consumption).

Steatite.—See *Soapstone*.

Steinberg Wine.—One of the best white Rheinish wines; in fact, a "Cabinet" wine, and a worthy rival of the famous Johannisberg. It is also the strongest of all Rhine wines, and is all produced from about 108 acres of vine land, which belongs to the Duke of Nassau.

Stein Wein or **Stone Wine.**—A German wine grown near Wurzburg-on-the-Main, in Franconia. Another *Stein wein* is also produced in Cape Colony, and is of excellent quality when old.

Stekel Tea is a decoction of the leaves of *Borbonia parviflora*, some other species possibly being sometimes included. It possesses diuretic properties.

Sterlet.—(See also *Sturgeon*.)—A small species of sturgeon, *Acipenser ruthenus*, from one to two feet long. It inhabits the Black Sea, Sea of Azof, and the Caspian Sea, as well as certain rivers in Russia and Siberia. The swimming bladder of this fish makes the best Russian isinglass, and its flesh is highly prized as food, while the roe of the female also yields a superior quality of *caviare*.

Stick Flour. — Port. *Farinha de pao*.

A Brazilian name for Cassava meal. (See p. 190, also *Tapioca*.)

Stickolice and Stick Liquorice.—See pp. 546, 547, 298, and 866.

Stilton Cheese.—(See also *Cheese.*)—This rich, white, and solid cheese has long been esteemed by many of our native *gourmets* and epicures as the finest and richest cheese made in England; but, like Gorgonzola, it is used more as a condiment than a food.

It is never made at Stilton, although this Huntingdonshire village gave it its name. Over a century ago, when coaches used to pass through Stilton, many travellers put up at the Bell Inn, where remarkably good cream cheese was served to them. Its renown grew, and hence the fame of Stilton cheese; but it was at that time really made by the landlord's sister, a Mrs. Paulet, at Whichcote, a small village on the eastern side of Leicestershire, about 30 miles from Stilton. This lady held the original receipt, and her successors were for many years under engagement to sell only to the famous Cooper Thornhill, of Stilton. We are told that marigold flowers contributed to its colour, that a gallon of water containing the marigold juice was added to "the milk of seven cows and the cream of the same number." Then rennet was added. The curd was put into a sieve to drain, then put into a cloth, and cold water was poured on it to cover it. Then, after standing half an hour, half the curd was put into a vat six inches deep, the top of the curd being broken to enable the other half to unite; then the other half was put to it, and a 56lb. weight was laid on it. It had to remain there half an hour, then be turned and put in press, and turned into clean cloths *every hour the day it was made*! Next morning it had to be salted, and then let be in salt 24 hours; then it was swathed tight till it began to dry and coat, and was kept covered with a dry cloth a great while. It was believed to be best made in August. "Stilton" is now imitated in several of the adjoining counties, but it is claimed the proper quality can only be made in Leicestershire, the manufacture being more or less an hereditary accomplishment, and Melton Mowbray is the market centre.

It is made of new milk, with added cream, the cream of one day being added to the entire milk of the following morning. The cheeses are made of all sizes, but the average is about 16lbs., and in form are generally twice as high as they are broad, and on analysis, when fresh, show about 32 per cent. of water, 24 of casein, 37 of fat, 2¼ of milk sugar, and about 4 per cent. of ash. When mature, they are nearly like *Roquefort* and *Brie* cheese, but are not considered sufficiently ripe and mellow for cutting until two years old at least, and not perfect unless decayed, blue marked, and moist.

Every farmer professes to have his own way in making them. To milk, warm from the cow, sufficient rennet is added to thicken it in 20 minutes. The curd is "laded" in strainers without cutting, and the whey allowed to separate from it naturally. On the renneting of the milk and the amount of acidity retained depends the peculiar excellence of Stilton. The curd is not pressed, but simply bound into the familiar column-shaped form with bandages of cheese cloth. To this mode is due the unique rugged rind of Stilton. After ten or twelve days in the cooling room the cheeses are removed to the curing room, where they are left for three or four months, by which time the fungus growth (blue mould) makes its appearance.

Others say that in making Stilton a tin cylinder open at both ends is advisable, six inches long and twelve inches in diameter, with perforated sides to allow the escape of the whey. Lamb's maw is used as a rennet, and a lemon filled with cloves is placed in the curd. Nine gallons of fresh milk and the cream from two to three gallons of milk are used for one cheese. The milk is heated to a temperature of 83° F. before adding the rennet. When the mass is curdled, say in one hour, it is strained through a cloth until it is fit to be cut. The tin cylinder is then placed upon a board and filled with alternate layers of curd and salt, and covered with another

STILTON CHEESE—(continued).

board. The cylinder with the cheese is turned over every two or three hours for the first day, and two or three times a day for the succeeding three or four days, after which the cheese is taken out, wrapped in a cloth wet with boiling water, and pressed until it is dry. It is turned twice a day, and protected from flies and insects.

Owing to the difficulty of expelling all the whey from curd which contains so much butter, *Stiltons* are very liable to ferment and burst.

The upland farms in Leicestershire and other noted districts adjoining, including the beautiful herbage and acid grasses of the Vale of Belvoir, are believed to produce a character of curd which, for fine texture and delicacy of flavour, is unsurpassed.

A spurious appearance of age is, however, sometimes given to this cheese by placing it in a warm damp cellar or by covering it with masses of fermenting straw or dung. Whatever the cause, and notwithstanding the pre-eminence of genuine Stilton cheese, its prestige seems to be somewhat declining, and *Gorgonzola*, with other foreign makes, appear to be superseding it.

Various attempts have been made during the last 100 years, and especially within the last quarter of a century, to discover the secret of success in the making of Stilton cheese, in itself a characteristic English product, superior when properly made and cured to everything else of its kind.

Some degree of mystery has always lingered about the best way of making it. To penetrate, if possible, more deeply into this mystery than any one had ever done before, Mr. J. Marshall Dugdale, who combines the skill of the expert with the energy of the enthusiast, recently accepted a commission from the Royal Agricultural Society to visit the Stilton district in order to report on the present methods of making Stilton cheese. The result of Mr. Dugdale's inquiries appears in Vol. X., No. 36, of the society's journal, and it may safely be said that it advances our knowledge of the subject to a higher level than has previously been attained. Yet, at the outset, Mr. Dugdale tells us that, as his visit of inspection proceeded, it became more and more evident that the task upon which he had entered was a most difficult one. Every cheesemaker seemed to work upon different lines, and he was unable to find any two cases where all the details were carried out in the same manner. Whether the dairy and the buildings for the manufacture of the cheese were convenient and well fitted up, or were inconvenient and made the most of, the fact remains that, owing to the skill and attention of each maker, at all the different dairies he visited he tasted excellent cheese. Illustrations are given of Stilton cheese rooms and of the methods of manipulating the curd—a most important matter. It scarcely appears possible to enunciate a single series of rules for the making of this king of cheeses. There is a fair degree of uniformity up to the time when the curd is ladled into the straining cloths, but at this stage, and in the treatment of the curd before salting, diversity sets in, and as many as three different methods in successful current use are described in detail. Most of the cheese is made from two curds, as making from one curd is very risky. Great divergence of opinion prevails as to the degree of tightening of the straining cloths. No test for acidity was used at any of the farms, the degree of acidity being judged by the taste, feel, and smell of the curd. When the right amount of acidity has developed the curd is broken by hand to the size of small walnuts, and salt is added at the rate of about 1 oz. to 4lbs. of dry curd, or 1 oz. to 3½lbs. of wet curd, care being taken not to get the curd pasty. For further technical details, and for information as to curing the cheese, the paper itself should be consulted by makers. It is significant, however, to read that the more the author inquired into the subject the more were the variations in methods of working that came under his notice. He, therefore, concludes that at the present time it is impossible to lay down any definite and precise rules for the making of Stilton

cheese so as to suit every case. What he has accomplished is to describe certain methods of making and to indicate certain causes of failure.

He is convinced that nothing but practical experience on each farm will show the best method of making really first-rate cheese from milk obtained on the farm. The secret of success in Stilton cheesemaking appears to be the possession of a thorough knowledge of the subject and the capability of applying that knowledge with effect on whatever farm the maker may reside. If a maker knows how to rennet the milk properly and how to get the right amount of acidity at the time of hooping, he has acquired probably two of the most important details in the process of manufacturing Stilton cheese.

Stiltons, when ripe, should be kept in a cool damp cellar, and never, under any circumstance, be left in a draught, as the cheese is very liable to crack and get dry. A good way is to put a damp cloth over the cheese, if it is noticed that they are becoming too dry. They should never be cut with a knife. Use the wire, and in this way you will have no breaking or crumbling, and the consumer will appreciate the piece cut much better if cut with a wire, as the appearance goes a long way in stilton.

Stingo.—A name for old, strong beer.

Stock-fish.—F. *Merluche, Morue en baton;* It. *Pejepalo.*

A commercial term for cod, ling, hake, and similar edible fish, which have been split and dried hard with or without salt, for keeping in "stock" a long time, or for exporting to distant countries. This kind of curing is mostly done in Newfoundland, Norway, Greenland, Iceland, and North Germany. Some of it is washed in the sea and simply sun dried, and not salted. The best is the fish which has been properly washed, split from head to tail, and cured by dry salting. That which is merely pickled and dried may look as well to the eye, but it cannot compare with salt bulk fish. See that the fish is split to the tail, the round tailed is usually *pickled* fish.

Stokos.—See *Temperance Drinks.*

Storage (Cold).—(See also *Chilled Beef*, p. 83, *Frozen Meats*, p. 305.)—One of the greatest aids to prosperity, whether of the individual or of the nation, is the prevention of waste, and any process which facilitates the preservation of a country's food supply possesses advantages which can only be estimated by those who know by experience how vast has been the waste of perishable food for lack of means by which the loss might have been averted.

Before cold storage became general, the butcher, despite every care, could not avoid considerable loss by reason of hot or muggy weather; indeed, it was regarded as inevitable. At the same time the public had to accustom itself, at certain seasons, to the unsatisfactory consumption of freshly-killed meat, which, even then, might be tainted before it could possibly be cooked.

Cold storage, however, has abolished these disadvantages; and at present anyone engaged in the meat business is without excuse in failing to employ this means of improving his stock and preventing loss. At the same time it is doubtful whether, in many instances, all the advantages of cold storage are properly realised. To possess a cold room or to have convenient access to public storage is a benefit not often enjoyed to sufficient degree. Too often it is considered enough simply to store the remnants of the week's stock, or to have a stand-by in case of a bad market; but to reap fully the advantages it is necessary that butchers and others should learn to employ storage as an essential part of their business, and not merely as an adjunct. So soon as meat has been killed sufficiently long it should be placed in a chill-room, and thence taken out as the demand may warrant rather than exposed in the place of business—be it wholesale or retail—awaiting the more or less fluctuating requirements of customers.

The advantages under this head are numerous:—

1. The advantage of being able to slaughter all the stock at the most convenient time, instead of doing so every day or night during the week.

2. The improved condition of the meat for cutting up when, instead of being soft, flabby, and still warm, rendering it impossible to handle satisfactorily, the meat is solid and in presentable form, and free from the unpalatable freshness so uninviting to the consumer.

3. A fact not usually noted. Meat so treated is much less liable to "fly-blow" than the unchilled article, apparently because the flies are repelled by the coolness of the meat, and indulge their propensities upon more inviting material.

4. The chilled meat keeps so much better when exposed for sale that there is far less anxiety under this head than when marketed with the animal heat still retained, without an opportunity of its ever being lost at summer temperatures.

The importance of a chill-room in connection with every abattoir cannot be over-estimated, and without this every such building should be regarded as incomplete.

Of course it is only in the larger towns that public storage is available, but the growing facilities for obtaining ice at a reasonable price, together with the numerous well-constructed cold rooms on the market, now place it within the reach of everyone in the meat trade to possess storage suitable for all business requirements. No one need now be content to expect loss simply because of unfavourable weather if cold storage is regularly and intelligently employed, and, besides the gain to the trader in avoiding this drain upon his own pocket, there is the gain to the community in being spared the waste of valuable products, and the consequent establishment of a more even range of prices by reason of supplies being better regulated, instead of markets being alternately glutted or insufficiently supplied for public demand. To sum up:—Cold storage for meat secures a better article without a greatly corresponding extra cost, and from a sanitary and hygienic standpoint the advantages are obvious equally to the dealer and to the consumer. If retailers of meats, poultry, fish, fruits, and provisions fail to realise these facts, the public will speedily help them to do so, as they will certainly recognise improvement in quality, and will demand that cold storage shall be recognised as a universal necessity, and not as an occasional luxury.

Stoughton Bitters.—An American concoction, made as follows:—16 ozs. of gentian root, 12 ozs. orange peel, 3 ozs. Virginia snake-root, 1 oz. saffron, and 1 oz. red sanders-wood. Grind these into powder, and then add 1 gallon of rectified spirit. Macerate for three weeks, stirring frequently during first fortnight; strain carefully, and the last pint of the liquor strain separately with pressure, and when clear add it to the other.

Stout or **Brown Porter.**—(See also *Ales*, *Beers*, *Porters*, etc.)—A strong and superior kind of porter, brewed chiefly in London and Dublin.

Dublin is now noted for its Stout and Porter, although brewing is only a modern industry in Ireland. Up to Waterloo very little beer or porter was drunk there, and most of that went from England. In 1817 only 30 barrels of porter were exported from Dublin, so that the vast extension dates from the last 50 years or so.

Stout is of a blackish-brown colour, bitter taste, and contains a large proportion of extractive matter. It is often recommended by medical men in cases of weakness and debility.

The chief adulterants are excess of sugar, water, treacle, salt, etc.

Stove Polishes. — A new class of black leads. A very fair quality may be made from 86lbs. Bohemian lead, 28lbs. Ceylon lead, 12lbs. Sulphuric acid, 7lbs. ground alum, 4lbs. crude glycerine. Pour the acid over the lead, add alum and glycerine, then grind with enough "Oil Substitute" to an easy smooth paste. After the naphthalene (see "*Oil Substitute*") has been "burnt in" by the heat of the fire, a permanent glossy black coating will result. (See also *Black Lead*, p. 112.)

"*Neo's Self-Shining Stove Polish.*"—During the present domestic crisis this preparation has enjoyed greatly increased sales. It is the general favourite with the housewife, as it requires no

brushing, merely a soft rag, to produce a brilliant and lasting polish, saving time and labour. Wholesale, 8/10 per gross; retail, 1d. or 1½d. Sample free. 73 New Clive Road, West Dulwich, S.E.

Stracchino Cheese.—See *Gorgonzola.*

Strawberries. — F. *Fraises;* G. *Erdbeeren;* Port. *Morangos;* Sp. *Fresas;* W. *Mefus.*

There are about half a dozen well-known species of the strawberry, *Fragaria vesca*, and scores of early and late varieties. Origin unknown. It is said that English cultivators made more money from this fruit than from any other. A few years ago North Kent (around Rochester) was the chief centre of production, but Sussex, Hampshire (especially to the east of Southampton, where in the Sarisbury district alone there are about 5,000 acres under strawberries), Middlesex (about Isleworth), Cambridgeshire, Cheshire (particularly around the villages of Holt and Farndon, where there are over a thousand acres); Herefordshire and Worcestershire also now grow large quantities. The Isle of Ely and the surrounding country are almost covered with strawberry beds. Aberdeen is a great centre in Scotland.

The plants, often called *vines*, have no stems, and are generally propagated by *runners*. They grow best in rich firm soil, with a subsoil of clay or gravel, and should be frequently watered. Potash is the chief mineral food of the plant, but they will not grow under walnut trees nor do well on land impregnated with chalk or lime. They should be planted in rows 2 to 2½ feet apart, with a space of 16 inches between each plant, so that a plough may be run between the rows in autumn to keep the plants on ridges and assist in the draining of the roots. In spring the ground is levelled, and straw litter is laid between the plants to save the fruit from dirt and wet. After the third or fourth crop they should be pulled up and replaced with fresh plants.

When ripe in Kent those required for eating fresh are picked with stalks into small baskets, which are emptied into "sieves" holding about 12lbs., and for each of these a picker gets threepence. The packing of "punnets" requires practice, neatness, and skill, and the hands sit in rough sheds built in the fruit-gardens arranging the fruit and leaves in the daintiest manner. These punnets are again packed in boxes of 30 or 60, and sent off in carts or train for market. The bruised or over-ripe fruit, termed "squashers," are put into casks for the jam factories.

Strawberries come into the markets in June, continuing till late in July, and are usually the most plentiful and cheapest in the early part of the latter month. They are considered the mildest of all the cultivated fruits, also very cooling and wholesome, with laxative and slightly diuretic qualities. The true *fruit*, however, are the tiny hard seeds on the outside of the berries.

The juice of the common strawberry is a good natural dentifrice. It requires no preparation or addition, but readily dissolves the calcareous incrustations of the teeth and renders the breath sweet and agreeable.

Strawberries contain more water than either gooseberries or currants, but very little nutritive matter, and very little of citric or malic acids.

The Spanish eat this fruit moistened with the juice of a sweet orange, but the very height of strawberry eating is with *coffee*. In fact, it has been said that nobody ever properly tasted coffee who has not drunk it in alternate mouthfuls with strawberries, and that nobody knows the really delicious flavour of strawberries except those who have tasted the fresh-gathered fruit immediately after clearing the palate with a drink of coffee. The best strawberries with the best coffee undoubtedly make each a delightful luxury. Fresh English strawberries excel all others, the imported kinds being generally stale and lacking in flavour. The small early foreign berries in light boat-shaped boxes reach our markets in May from Finistère in France, many acres being devoted to their special culture in the Plougastel district, near Brest.

The French varieties are mostly very pale, coarse, watery, and insipid, and

not fit to be compared with the large firm "Paxton," "President," and "British Queen," grown about Swanley, Cray, and Rochester, in Kent. The "Noble" is, perhaps, the earliest of the English, a large fruit of deep, rich colour, but with less flavour.

The best kinds for jams are (1) the *Elton Pine*, (2) the *Grove End Scarlet*. This plant is a free, compact, and abundant bearer; fruit, medium sized, depressed, roundish; skin, bright scarlet; flesh, firm, solid, pale scarlet, brisk acid flavour.

(3) The *Eleanor* or *Oxonian*. — This plant is moderately vigorous, healthy, and a free bearer, withstanding drought better than any other variety. Fruit very large, conical, or wedge-shaped, hollow at the core, handsome; skin, scarlet, crimson when ripe; flesh, red, juicy, with a brisk sub-acid flavour.

Strawberries are mostly eaten fresh or made into jam, jellies, etc. Unlike other small fruit, they are seldom used for pies and puddings, yet if gathered before fully ripe they make both these of excellent quality. As already shown, they are very healthy, digestible, and refreshing, and may safely be eaten in quantity. They never undergo the acetous fermentation whether eaten or laid in heaps.

A palatable wine and vinegar may nevertheless be prepared from strawberries, and they are sometimes preserved entire in syrup or wine.

Strawberry Jam. — Perhaps the most difficult jam to make because it boils so thin. It requires great care and a little more cooking than raspberry, but does not appear done when it may be really overdone. Containing more water it takes longer to set, and if boiled too much will be tough and very dark, with a burnt flavour. This jam would taste better underdone than over, and as the fruit does not contain so much acid as the others, it is not so liable to turn.

Strawberries contain only very small proportions of citric or malic acids, so that two parts of strawberries and one part of gooseberries make a much nicer and more piquant jam than strawberries alone, but, of course, it could not be called pure strawberry jam. For this latter 18lbs. of fruit and 16lbs. of crushed sugar is a common boiling. The fruit should be brought to the boil before the sugar is added. It is finally boiled about 20 minutes, and to prevent boiling over 3 or 4 ozs. of butter are dropped in as required, when the jam is about half boiled. The sides of the pan should be kept clear with a knife.

Sugar seems to detract from the flavour of strawberries, while it enhances that of raspberries.

Strawberry Tea.—Made in Germany, from the young leaves of the wild strawberry plant, *Fragraria collina*, or *F. vesca*. After being carefully dried, they are used instead of China tea, and are made to approach that beverage very closely in taste. An addition of young bramble and woodruff leaves is said to add to the excellent flavour of this cheap substitute.

Strichetti, Tortellini, etc.—Italian fancy pastes made of *gluten*, for use in soups, entrées, etc., like tapioca and sago, but more easily digested by aged persons, invalids, and delicate children.

Strichetti consists of gluten and egg, and sometimes spinach; *Tortellini*, of gluten, eggs, fowl, and cheese; *Sweet Tortellini*, of gluten, egg, and fruit; *Pastina* and *Glutinata*, solely of gluten, or gluten and egg. The materials, being kneaded and coloured, are stamped out while soft, twisted into various pretty and appetising figures, and then dried like ordinary Italian pastes.

Succades.—A general term for imported sugar products, confectionery, etc.

Succan or **Llymru.**—See *Sowans*.

Succory or **Wild Endive.**—(See also *Chicory*.)—Succory is a general name in the United States for chicory, and the uses made of the top of the plant and those made of the bottom are very different.

It is largely cultivated in France, as a winter salad, under the name of *Barbe du Capucine*, and is grown similar to carrots. When the roots have attained

a fair size they are drawn, and the leaves cut off. The roots are then planted in sand in a dark room or cellar, and they soon throw out *white leaves*, which form an excellent vegetable.

Succotash.—An American food, consisting of a mixture of green Indian corn and Lima beans boiled and put up in 2lb. tins, at about 4/6 per doz.

Suet.—The hard, solid fat obtained from the omentum of sheep and oxen, and is analogous to the *lard* of the pig. The best for grocers and provision dealers to sell is *Hugon's "Atora"* refined beef suet. (See p. 20.)

Suffolk Cheese.—(See also *Cheese.*)—This is made from thrice-skimmed milk, and pressed in round flat forms. They weigh 24lbs. to 30lbs. each, and are generally very hard and horny. A joke about *Suffolk bang cheeses* says:—"Dogs bark at them, pigs grunt at them, but neither can eat them."

Sugar.—Ar. *Soukar, Sukhar;* Da. *Sukker;* Du. *Suiker;* F. *Sucre;* G. *Zucker;* It. *Zuccaro, Zucchero;* Mal. *Goola;* Per. *Shakar;* Pol. *Cukier;* Port. and Sp. *Azucar;* Rus. *Sachara;* Sw. *Socker;* W. *Siwgr.* (See also *Beet Sugar, Cane Sugar, Confectioners' Icing or Caster Sugar, Corn-starch Sugar, Invert Sugar, Jaggery, Lump Sugar, Maple Sugar, Muscovado Sugar, Rappadura Sugar, Sorghum,* etc.)

There are few articles of commerce better known than sugar—the manufactured article itself—and few (if any) having such a widely-diffused, nay, almost universal, range of utility; but its varieties, sources, and history are not so often considered, and no one has exactly found out why sugar is sweet!

Sugar has been known ever since the dawn of history, but not in all countries. The Chinese have delighted their palates with it for more than 3,000 years, and it was known in India earlier than in Europe, although it was not known to the ancient Jews. The latter used honey, but Pliny relates how some sugar was brought into Europe by Alexander the Great in 327 B.C., and one of his generals carried more into Greece in the year 325 B.C.; but even so late as 150 A.D. the article was still a rarity there. It appears to have been utterly unknown to the Egyptians, Babylonians, Chaldeans, Jews, and the Greeks prior to the event mentioned above. The famous physician, Galen, used it as a remedy for certain maladies. According to Ebst El Arran, sugar cane was brought to Spain by the Saracens as early as the ninth century. By the eleventh century its cultivation had extended over all the southern part of the peninsula, and, considering the intelligence and enterprise of its Moorish cultivators, probably as far north as climate would permit. In the year 1440 (seven years before the birth of Columbus) Don Enrique, Regent of Portugal, took it from Sicily to the Island of Madeira. It is claimed that Columbus took it to America upon his third voyage, and also that Pedro de Entienza introduced it to Santo Domingo in the year 1506, but it does not appear to have reached Cuba before 1511, brought by colonists from the sister island. The invention of the first process for refining sugar is ascribed to the Arabs, and from them a Venetian merchant is said to have purchased the secret, and started the industry in Sicily about 1503. The same process was successfully introduced into England in 1569, but for many years sugar remained a very dear and rare luxury; indeed, it is only during the last hundred years that sugar has come into general use in this country. In 1800 the retail prices were 9d. to 1/8 per lb.; in 1900 they were 1d. to 2d., and will probably soon be lower still.

The consumption in the United Kingdom is now over 1,500,000 tons a year, or, in other words, about 86lbs. per head of the population; and it has been calculated that we pay about £15,000,000 yearly to foreigners for this product, British Colonial sugar having now almost ceased to be imported.

The principal sources of sugar are (1) the sugar cane; (2) the white beetroot, as in France, Austria, and Germany; (3) the sugar maple, as in North America;

SUGAR—(continued).

(4) sorghum, millet, or maize, as in India, China, and Africa; (5) several kinds of the palm, as in India, Ceylon, etc.

SUGAR CANE.

Sugars may be divided into two classes, *saccharoses* and *glucoses*. Saccharoses are familiar to us as the produce of the sugar cane, and are noted for facility in crystallising and for their intense sweetness of taste. The purest specimen is loaf sugar, which is identical in composition with sugar candy, the only difference between these two forms being due to the fact that loaf sugar is allowed to solidify more quickly than the other. The sweetening ingredient is called *sucrose*. The congeners of cane sugar are *mycose*, of which the only distinctive peculiarity that can be adduced, without entering into discussions of chemical reactions of little interest, is that it exists in ergot of rye; *lactose*, or milk sugar, usually obtained by the evaporation of whey, in the form of white translucent crystals, slow and difficult of solution in cold water, and possessing great hardness and a faint sweet taste; *synanthrose*, a light amorphous powder, very deliquescent and not sweet, occurring in the tubers of the Jerusalem artichoke; *maltose*, a sugar analogous to lactose, produced by the action of malt extract on starch; *melitose*, thin interlaced crystals, having a very slightly sweet taste, and obtained from the opaque drops of manna that fall from Tasmanian eucalyptus trees; *melezitose*, a glass-like sugar that has been utilised in optical apparatus, and is obtained from a sappy exudation of young larch trees; *trehalose* and *parasaccharose* are varieties of less interest.

The glucose, or grape sugar family, includes *levulose*, a colourless, uncrystallisable syrup, as sweet as cane sugar, and occurring in many fruits; *inosite*, a crystalline glucose, resembling gypsum, but quite soluble in water; it occurs in the muscular substance of the heart and other organs of the animal body, and also in kidney beans and many other plants; *galactose*, another crystalline glucose, obtained by boiling milk sugar with dilute acids; *sorbin*, a colourless crystallisable sugar existing in the juice of ripe mountain ash berries; *eucalyn*, a product of the fermentation of melitose or eucalyptus sugar (referred to above); *dambose*, extracted from caoutchouc; and *mannitose*. Grape sugar itself is frequently manufactured by the hydration of starch (boiling with dilute acid). It forms granular warty masses, or fuses to a vitreous substance, is cheaper and less sweet than ordinary sugar, and has been sometimes substituted for this in admixture with *saccharin*, the recently-discovered coal-tar sugar.

But to enumerate all sugar-yielding substances is, perhaps, here unnecessary.

The ordinary grocery sugars are obtained from either beetroot or the sugar cane, and the only adulterant now heard of is silicate of lime.

Imports.	1897	1898	1899
Raw Cane . .	251,662	259,266	181,702
,, Beet . . .	426,016	475,379	474,384
Refined	791,538	826 013	890,405
Total tons . .	1,469,216	1,560;658	1,546,491

The processes of manufacture are described under *Beet*, *Cane*, *Raw*, and *Lump* or *Loaf Sugar*.

SUGAR—(continued).

The difference between common cane and beet sugar may be easily distinguished by colour, smell, and taste. Cane is ordinarily of a bright yellow or straw colour, while beet is inclined to white rather than yellow; also has a nasty "hogo" flavour and smell. When beet sugar is put into tea without milk it will be noticed to turn the liquid very dark, but not cane sugar. Cane has also a superior and more agreeable sweetness and richer flavour than beet. A very little practice in comparing the two sorts will soon teach the novice to know one from the other.

When, however, cane or beet sugars are highly refined and clarified, crystals may be produced which are not so easily identified. An old test, long in vogue, was to make a solution of tannic acid, a few drops of which on a sample of cane sugar had no effect, but on white sugar made from beet it had the effect of turning it quite a brown shade; but that test is of very little use now.

A West Indian test, and a very good one, is to heat a strong solution of the sugar with a few drops of sulph-indigotate of potash (indigo carmine), when a change of colour indicates beet, but no such change occurs with cane sugar.

The methods of refining sugars are constantly improving, and the prices lowering.

More than 90 per cent. of the 400 beet-sugar factories of Germany are united in a Sugar Trust for the purpose of marketing their product. The association not only fixes prices, but pays for experiments conducted for the general good. This is not a Trust after the latest American fashion of concentrating all the factories under one ownership. Under the German laws this is not necessary. The association works in harmony with the Government, the object being to make sugar at the least possible cost and sell at the highest possible price. The most of the German output is exported. Great efforts are made to improve the processes of manufacture, and a good factory is expected not to lose more than 1 per cent. of the sugar content of the beet, as shown by laboratory tests. The Germans are expecting more strenuous competition than ever when the Cuban planters get once more squarely on their feet, and are bending every effort to devise ways for making sugar from beets as cheaply as it can be produced from cane. They believe that they will succeed.

Some say there is no reason why sugar may not yet approach soda and salt in cheapness.

The cane sugar industry in the United States has assumed great importance. Instead of the canes being crushed one by one in a horse mill, and the juices evaporated in a pan over an open fire, as were the methods a century ago, the Louisiana firms now have six and nine roller mills of immense size, crushing 1,000 to 1,500 tons per day. Only about 8 per cent. is left in the canes, and the streams of juice are quickly concentrated by the aid of vacuum strike pans and other patents into *masse cuite*, which by turbinage yields the golden and snowy crystals of commerce, minus 5 to 10 per cent. of scum and settlings or uncrystallisable sugar, to be filtered and dealt with afterwards.

During the earlier years of Australian settlement the possibility of successful sugar cultivation was never dreamed of by the colonists; but as the tide of population along the eastern coast swept northward, and the shores of the Clarence, the Richmond, the Tweed, and the Brunswick Rivers became peopled with industrial pioneers, their remarkable capabilities for semi-tropical cultivation became speedily recognised; but it was not until the earlier sixties that any systematic attempt at growing sugar cane was made. Since then sugar cultivation has become a staple industry, not only in the northern coastal districts of New South Wales, but also in Queensland. The first recorded instances of successful sugar cultivation in the parent colony were at Bathurst, on the western side of the Blue Mountains, and on the Macleay River; but the vicinity of the "City of the Plains," as Bathurst is popularly

SUGAR—(continued).

designated, was found unsuitable for growing sugar cane on an extensive scale. In 1899-1900 the New South Wales area under sugar cane cultivation was 22,517 acres, of which 9,453 acres were cut, the produce being 170,509 tons of cane. The area and yield vary largely, the average production being more or less, as in the West Indies, considerably affected by climatic conditions. The largest crop was in 1896-97, when 320,276 tons of cane were obtained from 18,194 acres. Formerly, the settlers made sugar and maize their staple crops, but of late years they have combined dairy farming with cane and maize cultivation, some of the finest butter in Australia being obtained from this part of the colony. Nearly the whole of the cane is purchased by the Colonial Sugar Refining Company, the headquarters of which are in Sydney, and which has extensive sugar mills in New South Wales, Queensland, and Fiji, the largest being that at Broadwater, on the Richmond River. The establishment covers some 17 acres of ground. Here the progress of the raw produce into the manufactured article is readily traced. Outside, on the river, the cane is in punts, which are brought to the mill by a fleet of small steamers. By travelling sets it is conveyed between immense rollers, and from one lot of rollers it is passed on to others. As it goes through it is treated with steam and water to assist in the abstraction of the sweets. The juice is received into wells, from which it is drawn by pumps to the top of the building. Here, after being clarified by the admixture of lime, it is run into tanks, where it is allowed to subside, and is afterwards conveyed to the evaporating pans, where it is concentrated and condensed. After this it is turned into vacuum pans, where the liquor is boiled to grain. The sugar is separated from the molasses by the agency of centrifugals, and finally it is bagged ready for export. The process goes on in one complete chain from beginning to end. What was cane in the morning may in the evening be sugar, packed and shipped and on its way to Sydney.

Modern methods of sugar-boiling at a low temperature, say 115° to 120° F., and the use of animal charcoal, enable a great deal of low grades of sugar and water to be incorporated with low-priced qualities, which are, however, almost white in colour, and find a ready sale for culinary purposes. However, as a matter of economy, these low-priced kinds are really the dearest, for the amount of actual sucrose they contain is very small.

Stoved Goods, as their name implies, are sugars which during manufacture have been baked in *stoves*, or moulds, before being made into cut loaf or cubes.

Tate's Cubes are said to be a mixture of cane and beet sugar. (See *Cube Sugar.*)

Pieces are refined sugars in a moist state, not "stoved," and have much the same appearance as raw or unrefined sorts.

In making them the separation of the uncrystallisable part is effected by the centrifugal machine, and the first production of crystals is called "lumps," whilst all others from the same syrup are termed "pieces." Ultimately all, or nearly all, the treacle, or syrup, is absorbed by a sort of bastard crystals, and sold as raw sugar.

The silly public often prefer the appearance of the sticky, moist sugar, not knowing that the moistness is caused by the molasses left in to cheapen it, and they reject the genuine dry cane sugar, which has been properly treated in the centrifugal machine, and had all the molasses thrown out. Consumers should be educated into buying cane sugar only, instead of bounty-fed beet, which the refiners actually have to perfume in order to disguise its evil smell, and make it resemble the genuine cane sugar.

"*Refines*" means all sugars that are *refined*, whether moist or dried.

Clayed Sugar is sugar which before importation has been subjected to a process of purifying, or bleaching, by water passed through a layer of clay—a pro-

SUGAR—(continued).

cess said to have been first discovered accidentally, from a hen having walked over a cooler full of sugar, and left the mud from her feet behind, upon removing which it was found that the sugar beneath had become a much lighter colour.

There is a manufactory in Germany that makes absolutely pure sugar, but it is probably the only one in the world. It supplies chemists and druggists with sugar for solutions which are required to be perfectly unclouded. This chemically pure article would, however, not find much sale for table use, as it is a dirty greyish-white in appearance, but when dissolved it gives a clear solution, there being no artificial colouring matter.

Sugar Mites.—There is one pest which nature has seen fit to inflict on sugar; it is the sugar mite, or beetle, *Acarus sacchari*, a very small insect, which, though visible to the naked eye, looks little more than a dark speck. This small insect is usually the cause of the irritation of the skin, especially of the *hands*, to which grocers are so subject, particularly those who have much to do in the mixing and weighing of cane sugar.

In 1864, 97½ per cent. of the consumption in the United Kingdom was of cane, and only 2½ per cent. of beetroot. In 1883, the proportions were 58½ of cane and 4½ of beet. Now, in 1901, the consumption is over three-fourths beet and scarcely one-fourth cane.

The bounties and drawbacks allowed by certain governments to their manufacturers who export sugar now aggregate over £6,000,000 a year. It is produced so far beyond the normal native consumption, that the English housewife is able to get sugar at 1d. or 2d., while in the countries where it is made the people have to pay 3d. to 7d. per lb. Next to England with its yearly consumption of 88lbs. of sugar per head, comes America with 62lbs., then France with 27lbs., India 26lbs., Germany 22lbs., and Austria with only 9lbs.

A grocer ordinarily sells 16 times the weight of sugar that he does of tea.

That the use of cane sugar promotes health, strength, and fat, has been proved by shipwrecked crews, by negro labourers on sugar plantations, and by others who have by choice or necessity lived mainly upon it for considerable periods; but owing to the chemicals employed by refiners of beet sugar, it becomes injurious to the teeth. Hence, if any be left in the mouth it is liable to cause decay of the teeth by setting up fermentation. In course of manufacture of the white granulated grades of sugar considerable quantities of sulphuric acid are used, not only in cleaning vacuum pans, etc., but during the process of "curing" in order to "wash" the sugar white and give it the "bloom," which is the *sine quâ non* in the markets. A large amount of the imitation "Demerara" cane sugar is also produced by the liberal use of commercial sulphuric acid. Sound teeth, for instance, placed in a syrup of beet sugar and water will quickly soften like chalk. Bees fed on beet sugar soon die of dysentery. It is high time our legislators put a stiff duty on imported beet sugar, thereby not only correcting the iniquitous bounty system but helping the British cane sugar growers, and at the same time encouraging the consumption of the best kind of sugar. Labels of distinction for cane and beet sugars should be introduced and insisted upon, because to consumers there is no convenient way of telling one sugar from the other over the counter.

A lump of sugar contains as much nutrition as an ounce of potato, and is far more easily assimilated. The entire juice of ripened cane is more complete food than sugar, containing, as it does, other food constituents besides carbohydrates.

About 70,000 tons have been annually consumed by brewers, although glucose and saccharin seem to be replacing granular sugar in brewing.

Public sales at the London Commercial Sale Rooms, Mincing Lane, at one o'clock every Tuesday and Friday.

CONSUMPTION OF SUGAR IN THE UNITED KINGDOM.

Year.	Tons.	lbs. per inhab.	Duty per ton. £	Price per ton. £
1705	12,000	3	3	70
1730	41,000	9	4	70
1750	53,000	11	5	70
1780	77,000	14	7	70
1801	165,000	22	20	85
1811	184,000	23	27	90
1820	143,000	15	27	63
1830	214,000	20	24	49
1840	188,000	15	24	48
1850	310,000	25	10	40
1860	420,000	32	13	35
1870	690,000	49	5	32
1881	1,050,000	68	—	22
1888	1,170,000	70	—	14
1899	1,546,491	88	—	12

Wholesale Sugar Merchants.—Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool; The Pure Cane Sugar Co. (J. Philip & Co., agents), 4 Fenchurch Buildings, London, E.C.

Gardner's patent "Rapid" Sifter and Mixer, freely used for above. Prices, from 50/- to £100. Catalogues from Wm. Gardner & Sons, engineers, Gloucester.

Sugar Apples. — See *Custard Apples*, *Sweet Sop*, etc.

Sugar Beans. — There are two species: a sweet and nutritious kind of pulse, botanically named *Phaseolus saccharatus*, cultivated in the West Indies; and a scimitar-podded kidney bean, *Phaseolus cimatus*, a native of Eastern India.

Sugar Candy. — F. *Sucre Candi*; Per. *Nabat*. (Also called *Dutch Candy* or *Candied Sugar*.)

It is prepared from a solution of brown or clayed sugars, boiled till they form a thick syrup, after which strings or sticks are saturated with the hot liquid and left in a warm place, say 90° to 100° to dry slowly, while the sugar adheres to them and gradually forms itself into the crystallised or clarified sweetmeat known by the above titles. It is almost the only form of refined sugar used in China and India. The word "candy," as applied to sugar, is taken from the Arabic word *Kand* or *Kandat*.

Persia is famous for its sugar-candy or "*Nabat*." It is made in the usual way, but is left to crystallise on strings in an earthenware or china bowl. The strings are kept at the bottom of the bowl by a piece of lead, and at the top by strips of wood; when taken out of the bowl it retains its shape, and is called *Kasch-i-nabat*, *i.e.*, a bowl of candy. In Mexico and South America a similar preparation is called *Rappadura*.

The kinds common in England are mostly imported from Holland or Germany, and are as various in quality as sugars themselves. They are generally classed as white, pale, straw yellow, yellow, dark yellow, light brown, brown, and dark brown. Packed in oblong wooden cases lined with coarse paper, and containing about 30lbs. each. Value about the same as sugars, boxes free. If packed in bags it is about 6d. per cwt. cheaper than in cases. The tops of the cases are often covered with the best and most shapely pieces, while the middles and bottoms are filled up with the small, dusty, or unshapely lumps.

The whitest quality, made from refined sugar, is often the highest in price, but is by no means the best. Some of the richest and best flavoured, being made from raw cane sugar, are of a dark brown colour with the fine flavour of Demerara sugar. The crystals of beet are also too long and flat. Some common kinds are almost destitute of taste or flavour, and are of resinous appearance. Others are dyed fancy colours, such as pink, yellow, blue, chocolate, etc., by previously colouring the syrup or dipping the whiter kinds in coloured water. (See also *Barley Sugar*.)

To clean and brighten up candy that has become old, dull, and dirty, it should be brushed quickly with water and immediately be wiped and dried near a fire.

The preference for sugar candy as a sweetmeat is because it is usually cane sugar, although, as a fact, much is now

made of brown beet sugar, and has very little flavour or sweetness, and also because it is longer in dissolving than ordinary sugar.

It is sweet, but by no means so sweet as sugar, and cannot be used with advantage to sweeten foods.

Importers of Dutch Candy.—C. Mason & Co., 8 Orwell Place, Ipswich.

Sugar Corn. —See pages 177 and 563.

Sugar-cured Meats. — (See also *Smoked Hams, Swine, Tinned Hams,* and *Tinned Meats.*)—There is nothing new in the idea of employing sugar instead of salt as a preservative for meat. We have in past years had frequent opportunities of noting the effects of sugar on hams. The hams were placed in a pickle, if we may so call it, of sugar and molasses. The fresh hind-quarters of the pig were first well rubbed with powdered sugar, and were then placed in the saccharine solution and left undisturbed for some weeks. When cooked the meat did not present the red and white appearance of the brine-cured article, but more resembled fresh pork. Yet the taste was precisely the same as that of ham, albeit a little sweeter. In connection with this, we learn that experiments have lately been made, under the direction of the French Minister of Agriculture, which demonstrate that sugar is a good agent for meat preserving, and possesses some advantages over salt. It is pointed out that the latter absorbs a portion of the nutritive substances and of the flavour of the meat. When an analysis is made of a solution of salt dissolved by water contained in meat, albuminoid bodies, extractive substances, potasse, and phosphoric acid are found. Salt deprives meat of these substances so much the more readily in proportion as it enters the tissues more deeply, or acts for a longer time. The result is that the meat, when taken from the saline solution, has lost nutritive elements of genuine importance. Powdered sugar, on the contrary, being less soluble, produces less liquid. It forms round the meat a solid crust, which removes very little water from it and does not alter its taste. Thus preserved, it is sufficient that the meat is immersed in water before using it. Although this treatment costs a little more than preservation by salt, account must be taken of the final result and of the loss prevented, which offsets the difference in cost between the two preservatives. (See also pages 69 and 456.)

Sugar Mites or **Eczema.**— See *Grocers' Itch,* in Index.

Sugar of Milk.— F. *Sucre de lait;* Lat. *Saccharum lactis.*

Sugar of Milk, or *Lactose,* is usually imported in cylindrical candied masses about 2 inches in diameter, with a cord or stick in the centre, or in fragments of cakes in similar form to sugar candy. It mostly comes from Switzerland in large casks, and is of greyish-white colour, crystalline on the surface, and in its texture hard, without smell, but faintly sweet and somewhat gritty or chalky when chewed.

It is obtained by first separating the curd from goats' milk, and then evaporating or condensing the whey to about 1-15 its original bulk, or till it is ready to crystallise; after this the resulting brown viscid and sweetly saline mass is purified with animal charcoal, and finally the crystals of sugar are deposited on the small pieces of wood or cord.

In most places the fresh milk is brought into the common shed or barn and the cream taken off. Cheese is then made out of the milk, and the residue is then placed in iron pans, where a crystallisation soon sets in, thus producing the *sugar of milk.* What is left beneath these crystals is fed to swine.

A more recent and improved method, however, is first to neutralise the whey with whiting, and then to evaporate it till the sugar separates from the purified solution in cohering laminæ and crusts.

Sugar of milk is soluble in three parts of cold and one part of boiling water, and is incapable of fermentation unless boiled with dilute acids, when it changes into a fermentable sugar, very like grape sugar. It forms a dry and gritty powder, which does not absorb moisture

or become lumpy like powdered cane sugars.

In its refined condition it is largely employed in the manufacture of infant foods, also as a vehicle for the more active medicines, and has long been considered by homœopathists particularly suitable as a basis in the formation of their globules and pilules.

Milk-Sugar Test.—One of the U.S.P. tests for the purity of milk sugar requires that no brownish or blackish colour shall develop within 30 minutes when the sugar is sprinkled over the surface of sulphuric acid, but polarisation is considered the safest test.

Sugar-Plums, Lollipops, etc.—These are general names for Sweetmeats, Comfits, or "Goodies." (See *Boiled Sugars*, *Bon-bons*, *Lozenges*, *Pralines*, *Fondants*, *Sweets*, etc.

Sugar Pods.—See *Locust Beans.*

Sugar (or **Glucose**) **Vinegar.**—(See also *Mother of Vinegar.*)—This is made from sugar, glucose, treacle, and water, by the aid of the vinegar fungus (*Penicillium glaucum*), which soon forms on the top of weak vinegar exposed to the atmosphere. This plant, or a piece of it, is put into luke-warm water in which sugar and treacle have been dissolved, and the whole is exposed for several weeks in a warm place (often over the kitchen mantelpiece) till it runs into a sort of vegetable vinegar.

Recipe.—1 gallon of water, 1¼ lbs. new sugar, and ¼ pint of yeast. At a temperature of 80° it will be sufficiently acid in three or four days to be drawn off, when an ounce of cut raisins or of cream of tartar should be added, and after a few weeks the sweet taste will have entirely disappeared, so that the fluid may be bottled.

But this vinegar is very inferior, and only made now in remote country districts.

Sugared Almonds.—F. *Amandes lissées.* (See *Dragées*, pp. 330 and 288.)

Sugarine.—Under this name has been patented as a dietetic sweetening agent a new sugar substitute, methyl-benzine-sulphinide, which is stated to possess 500 times the sweetening power of sucrose. We are told that it is obtained by saponifying toluol-cyano-sulphanide with caustic potash, and liberating the new product with sulphuric acid; the crystals which form are then purified by crystallisation from di-methyl-benzine. Chemically speaking, nothing may be clearer, but probably housewives may hesitate to put it in their tea. (See *Saccharin.*)

Sulphate of Lime.—See *Gypsum.*

Sulphur or **Brimstone.**—Ar. *Kibreet;* Da. *Svool;* Du. *Zwavel;* F. *Soufre;* Ger. *Schwefel;* It. *Zolfo*, *Solfo;* Port. *Enxofre;* Sp. *Azufre.*

A yellow brittle mineral substance without taste or smell, and more or less transparent. It is found in a free state in Iceland, Italy, Java, Formosa, California, New Zealand, Mexico, and other volcanic countries, sometimes in a granular or powdery state, and sometimes in large crystals.

Some 20,000 tons, in dirty yellow lumps, called "Rough Brimstone," are imported yearly from Sicily, where the finest beds in the world are found.

Indeed, sulphur is the most important mineral worked in that country, the average annual export for the last three years being about 400,000 tons, and the business is now largely in the hands of the Anglo-Sicilian Sulphur Company, Limited, of London.

Sulphur in considerable quantity is also obtained from certain ores of iron, copper, pyrites, galena, blende, and other metals, such ores being termed oxides; and this is the kind of sulphur from which sulphuric acid is mostly made. Sulphur is insoluble in water, and nearly so in alcohol and in ether, but is quite soluble in petroleum, benzine, etc.

It is usually extracted from the earthy materials either by (1) dry heat (roasting the ore in mass); (2) wet heat (melting out by the aid of aqueous solutions of salts, the salts being added to heighten the boiling point); (3) superheated steam; (4) chemical solvents,

The great bulk is extracted by apparatus belonging to the first class.

Flowers of Sulphur. — A yellow powder, consisting of the fumes of sulphur when heated and condensed. Wholesale prices, 6/6 to 8/6 per cwt.

Pharmaceutists differ as to whether this sublimatum of sulphur should be spelt as "flour" or "flowers" of sulphur, but the first seems preferable, although the powder is in much the same condition as "flowers of benzoin," "flowers of camphor," etc.

Milk of Sulphur.—A white impalpable powder, made by dissolving sulphur in a solution of *milk of lime*, and adding muriatic acid. Hydrogen sulphur is set free, and the sulphur falls to powder.

Of course, there is no milk about it, the use of the word being merely figurative. The old-fashioned milk of sulphur used to be made with sulphuric acid, and consequently contained an undesirable proportion of lime. Anyone now selling it with an excess of calcium sulphate is finable.

Stick, Caned, or *Roll Sulphur* is sulphur which has been refined by melting it in pots and running the liquid into wooden moulds, or by heating the coarser lumps in iron retorts until it boils, and collecting the vapour in liquid form, and then moulding.

Sulphur Candles, as Fumigators, are an improvement recently patented by Mr. Kingzett. The candle is composed of a block of sulphur of which the bottom and sides are enclosed by a casing of metal foil, and having some light fabric or material to serve as a lighter, slightly coated with sulphur. This is held down to the top of the sulphur block by the upper edges of the sides of the metal foil casing being bent down over it.

Precipitated Sulphur is prepared by boiling sulphur and slaked lime together in water; after filtering, hydrochloric acid is added, and the sulphur is precipitated. It is finally washed. It is apt to be adulterated with sulphate of lime, sometimes to the extent of 50 per cent.

Sulphur is used extensively in making gunpowder and sulphuric acid (oil of vitriol).

A little sulphur in a bag hung in the cages of singing birds keeps away the insects with which the birds are frequently pestered.

In French vineyards powdered sulphur is commonly sprinkled over the vines to preserve the leaves from *oïdium*, a disease which dries them up and injures the crop.

Wm. Gardner & Sons, Engineers, Gloucester, make machines specially suitable for treating above. Catalogues free.

Sulphur Ointment. — One part flowers of sulphur mixed with three or four parts of lard. For *alkaline sulphur ointment*, mix 20 parts of flowers of sulphur, 10 parts carbonate of potash, 5 parts of water, and 65 parts of lard.

Sulphur Soap.—1. Mix ½lb. new white curd or Castile soap, 1 oz. of flowers of sulphur, with 3 or 4 parts of lard; or,

2. 40 parts cocoa-nut oil, 20 parts caustic soda at 50° B., and 3 parts flowers of sulphur.

Sulphuric Acid. — F. *Acide sulfurique;* G. *Schwefeligesäure;* It. *Acido Solforoso liquifatto;* Sp. *Acido Sulforoso liquidado.* (See also *Vitriol.*)

Sulphuric Acid, so-called from its containing sulphur, is one of the most important chemical agents used in the arts and manufactures; best made by conducting the fumes of sulphur through a leaden vessel, exposed to the action of an oxide, water, and steam. It is used in the manufacture of soda ash, in bleaching woollens, straw, etc., and for a variety of chemical productions, to the extent of 500,000 tons per annum. Much of that made in the United Kingdom is obtained from pyrites. The greater part of the pyrites used comes from Spain. A little comes from Norway and other parts of the world, but the great bulk comes from Spain. Almost all pyrites contain a trace of arsenic, and sulphuric acid (or vitriol)

made from pyrites likewise almost always contains a little arsenic. When it is desired to have this kind free from arsenic it has to be rectified, or de-arsenicated. When properly de-arsenicated sulphuric acid can be proved to be practically free from arsenic by the Marsh test, which is the most delicate commercial test known. When employed for producing food substances it should, therefore, always be efficiently rectified.

A quantity is employed in making glucose from maize starch, and such glucose often has traces of arsenic in it, although largely used in beers, "malt substitutes," jams, marmalades, syrups, etc.

Sulphurous Acid is the name given by chemists to the strong-smelling fumes given off by burning sulphur. In one proportion, it forms with lime *Sulphite of lime;* in twice this proportion, it forms Bisulphite (*bis*, twice). This bisulphite is soluble in water, and a little of the solution added to weak sugary liquors prevents them from fermenting or crystallising.

Sultanas.—F. *Sultanines.*—These small, light-coloured raisins derive the name of *Sultanas* from the fact of the species of grape being seedless or female. They chiefly come from Turkey, and, as they are nearly all shipped at Smyrna, they are often called "*Smyrna Raisins.*" The average export from Smyrna is about 40,000 tons yearly, the inland districts of Nymphio and Magnesia producing half the whole crop; but of late years some very fine sultanas have been produced in the Provinces of Corinth and Argolis, in Greece. Considerable quantities are also grown around Tchesmé. Sultanas comprise many varieties, called after the places of their respective growth, such as Carabournou, Nauplia, Vourla, Tchesmé, Phocé, Yerli, etc. The first-named are considered to be the best.

The best sultanas are usually of a pale golden yellow colour, with thin and delicate skins, almost transparent when new, and are very sweet, but without much flavour. Choice lots of uniform bright yellow colour often fetch twice the price of uneven light and dark coloured samples. They are usually cured in boiling oil. Their chief characteristic is the absence of stones, seeds, or kernels, thus saving time in cooking, but they are also popular as a table fruit and for confectionery. The seedless condition of sultanas, currants, and certain other grapes is attributed by scientists to the fact that, although the pollen-grains are well developed, either the pollen tubes do not reach the ovules, or the ovules themselves are incapable of impregnation.

New Smyrnas begin to arrive in England about the middle of August.

The prices have been steadily advancing of recent years on account of the increased demand in Germany, which now equals that of this country. These seedless raisins, being gathered young and before ripe, will not keep good so long as fully ripened stone fruit.

Stored in bulk, they neither lose nor gain in weight, but when kept weighed up they are apt to gain a trifle, although the flavour suffers.

Sumach, Sumac, or **Shumac.**—Da., G., and Sw. *Sumak;* Du. *Smak;* F. *Sumac;* It. *Sommaco;* Sp. *Zumaque.*—A dye stuff much used in tanning, as a substitute for galls, also used in confectionery, etc. It consists of the dried and pounded leaves, leaf stalks, small twigs, and flowers of several tropical shrubs, especially the smooth Sicilian *Rhus coriaria, R. Typhina,* and *R. cotinus,* the latter being also known as Zante Fustic or young Fustic.

They are grown in Sicily, Italy, Spain, Portugal, and some parts of France, but Palermo is the chief centre of the sumach industry, and the export thence in 1898 was 37,120,962 kilos, over half of which was ready ground and the remainder unground. Great Britain received no less than 14,927,124 kilos. A syndicate in Palermo tries to run up the price, so that *American chrome* is largely replacing sumach.

The Sicilian crop averages about

32,000 tons a year, and its local value about £265,000.

Sumac is sometimes sold whole, sometimes coarsely bruised, but most commonly ground to a fine powder; a preparation which enables it to be somewhat more readily extracted by cold water, but which at the same time often hides impurities.

There is the most tannin in the leaves when they have just reached their full growth, and they are usually gathered in July and August. The finest prepared sumach is of a lively green colour, well ground, free from stalks, and has a strong smell.

Sunflower Cake, Meal, Oil, etc.—In the south-east of Russia, in Hungary, and other parts of South Europe, the sunflower, *Helianthus annuus*, has for the last 30 years been a prominent product of the farmer.

Over a million acres are under this cultivation, which is extending yearly. The yield is prodigious, and the value per acre is said to be double that of wheat. Two kinds are grown, one with small round seeds for *sunflower oil*, and the other with larger seeds, which are hawked in the streets, and consumed in enormous quantities as nuts by the poorer natives.

The chief centres of this industry are in Voronezh, Berutchinsk, Novokhopersk, Bobrosk, Tambov, and Saratov. The seed is first enclosed in bags, then steeped in warm water, and afterwards the oil is expressed.

About 100 mills are engaged in expressing the oil, and the business is rapidly extending.

Sunflower cultivation requires a firm and fertile soil (like that of N.E. Essex), plenty of moisture, and a sheltered position on account of its long stalks and heavy heads. The soil is well ploughed in the autumn and harrowed in the spring; the seed is sown in April or May in every second or third furrow, being put in the ground at a distance of 2 to 4 inches apart; and, if broadcast sowing be resorted to, care has to be taken that only one seed falls in every two square feet. About 20lbs. of seed is required to sow an acre. While growing, the off-shoots and inferior buds are carefully removed, so as to throw increased strength into the four or five buds allowed to each plant.

An acre produces some 250 bushels, or 1,600lbs., of seed (say, 8,000 plants, at a quart each), each bushel yielding about a gallon of the bright yellow or almost colourless and tasteless oil. Owing to its nutritious qualities, purity, and agreeable flavour, it seems to be superseding all other vegetable oils in Russia, and is considered fully equal in colour, flavour, and taste to olive oil.

The yield in oil of seed in husks is 17 per cent., or without husks 20 per cent., but the total amount of oil is sometimes as high as 35 per cent.

The seed cups are usually fed to sheep, and the substance or cake known as *sunflower cake*, remaining after expression of the oil, forms an excellent auxiliary cattle food. The boiled leaves even, mixed with clay, are also fed to cattle, and the coarser stalks and shells, or husks, are used as fuel.

Some 50,000 tons of sunflower cake is exported to England and Denmark yearly. It is considerably harder than any other kinds of oil-cake.

Sunflowers, moreover, contain excellent food for bees, but contrary to the popular notion, they do not "*turn to the sun*" any more than other flowers.

Sunflower Meal, from its composition and pleasant taste, is becoming rather popular. In some parts of the United States it is made into bread. The percentage of proteid in it varies from 30 to 45 per cent. and fat 9 to 18 per cent. The *seed* is very rich and fattening for poultry, and a bushel of it mixed with a ton of chaff improves horse food very much, imparting a smooth and glossy coat.

Of the different kinds of sunflower-seed in Russia—some white or grey, some brown with white or grey stripes, some quite black, dyeing the cells a dark violet colour—the grey and striped seeds are preferred, as they appear to be much cleaner and handsomer, and therefore command a higher price, especially for

the purposes of raw consumption by the peasantry. The black seed, owing to its dark colouring-matter, is generally avoided. All these seeds appear in the market divided into two sorts. The larger kind, containing less oil, is the cheaper; the smaller, producing more oil, is sold to the oil manufacturers, and is much more expensive. The latter seeds are flat and oval, like coffee-beans, and are considered the best for this industry.

Supporne. — A thick sort of porridge made from maize meal, forming the national dish in Canada and the United States, as does oatmeal porridge in Scotland.

Surinam Coffee. —(See also *Coffee.*) —A variety from Dutch Guiana, South America, and the largest sized coffee bean grown.

Surinam Tea.—A plant of the genus *Lantana*, several species of which are used as tea.

Sussex Cheese.—A very poor and hard make, from milk said to be thrice skimmed, and very similar to Suffolk cheese.

Suwarrow or **Somari Nuts** (variously spelt *Suwarri*, *Sauari*, *Souari*, or *Squarri*). — These are the fruit of a very large South American tree, identified as *Caryocar nuciferum* (or *butyrosum*) and identical with the *Pekea tuberculata* of Aublet. It is native of Guiana and closely related to the Sapucaia and Butter nut trees. The kernel is very delicious, of Brazil-nut flavour, and really the most excellent nut known. It yields a valuable sweet oil.

Swedish Bacon. —There are several export bacon factories in Sweden, viz., at Gothenburg, Helsingborg, Landscrona, Malmö, Tomelilla, Ystad, Herrljunga, and Halleberg—which each week kill an aggregate of 4,000 pigs. The exports of bacon are rapidly increasing.

In 1892, 6,723,000 kilos; 1893, 6,593,000 kilos; 1894, 8,152,000 kilos; 1895, 9,728,000 kilos. The latter year, however, yielded about 25 per cent. of the finest quality.

Swedish Butter. —The number of milch cows in Sweden is about 1¾ millions or nearly half the number in Great Britain and Ireland. Although the human population in Sweden is only about 5 million, the acreage is about half as large again as that of Great Britain and Ireland. The proportion thus showing 3 persons for each cow, as against 10 persons for each cow in Great Britain and Ireland. Ergo Sweden not only provides dairy products for her own wants, but exports about 25,000 tons of butter a year, mostly *viâ* Gothenburg, but also *viâ* Uddevalla, Halmstad, Helsingborg, and Malmö, nearly all of which reaches England. The manufacturers are very careful in upholding the reputation of their brands, and although there is no special legislation in Sweden to exclude the possibility of adulteration, no instance of such falsification has hitherto been recorded.

Swedish Coffee. — See *Coffee Imitations* and *Substitutes.*

Sweet Corn.—See *Canned Corn.*

Sweet Flag. — A kind of marsh reed, *Acorus calamus*, which grows in swamps and ponds, and on the banks of rivers. The leaves are sword-shaped, and when bruised have a sweet smell. Its roots, nearly like horse-radish, have a strong smell and biting aromatic taste. They are frequently used in making certain kinds of candies, toilet vinegars, and in medicines, also in distilling and brewing.

The root is sometimes chewed.

Sold by most herbalists.

Sweet Nitre.—See *Spirits of Nitre.*

Sweet Potatoes or **Batatas.**—F. *Patates comestibles.*

The sweet potato *Batatus edulis* (*Choisy*), *Impomœa Batatas* (Lam.), or *Convolvulus batatas* (Linn.) is a perennial plant of the Convolvulus family. It is propagated by slips, cuttings, or pieces of the root. Although like the common potato (*Solanum tuberosum*) in being an enlarged growth of an underground stem, it is in other ways very dissimilar. Its green tops are

creepers, with heart-shaped leaves, and in their general form and purple flowers like those of the *Morning Glory*. Sweet potatoes are supposed to be of tropical origin, and native of the East Indies, but they are now cultivated in most of the tropical and sub-tropical countries for the sake of the tubers, which are highly esteemed as an article of food, but they do not thrive beyond about 30° North. They will not bear the cold of the English winters, unless in hot-houses, where they are easily grown 1lb. to 2lbs. in weight. They are rather difficult to keep after being dug from the soil, and to preserve as seed, and best kept in dry sand, at a low temperature. When old they become very watery and sad.

The sweet potato was well known in Europe long before our own familiar potatoes, and is the kind referred to by Shakespeare and other early English writers.

In some parts of America the sweet potato, next to maize, forms the principal diet of the poor; the leaves also are boiled, and used as vegetables.

It is becoming an important vegetable, and thrives best in the Southern States.

There are three kinds known in the American markets: the *yam*, *Southern Queen*, and the *Nansemond*. (See *Yam*.)

They vary considerably in size, shape, and colour, being red, white, yellow, and purple, while some are nearly round, and others long and pointed.

In Barbadoes and other parts of the West Indies they are a leading article of food, especially among the negroes. The variety known as *Patate igname* often weigh 6 or 8lbs. each.

They are eaten either roasted or boiled, and are sweet, wholesome, and nutritious, although somewhat laxative. They will yield about four times as much alcohol as ordinary (Irish) potatoes; the former yielding 12 or 13 litres per 100 kilos, while the latter yield only about 3 litres per 100 kilos.

Sweet potatoes also contain a much larger percentage of sugar than the common Irish potato, and are composed of about 32 per cent. of solid matter, 16 of which is starch and 10 sugar.

An allied species, *Ipomœa chrysorhiza*, is also eaten under the name of "Kumera" or "kumaris" by the Maories of New Zealand. The tuber can be easily sliced and desiccated in the same way that peas, beans, etc., are dried, and it retains its sweet and nutritive properties. *Canned Sweet Potatoes* are now put up by several packers in Maryland, and large quantities are exported to Germany.

Sweet Corn. — A name in the United States for certain varieties of maize. (See page 563.)

Sweet Cup. —A name given to the fruit of the *Passiflora edulis*, occasionally imported from the West Indies.

Sweet Sop. —The fruit of *Anona squamosa*, or Sugar-apple tree, very common in the West Indies, but rarely imported into English markets. Closely allied to the *Custard Apple*, see page 315.

Sweets.—(See also *Confectionery*.)—These comprise *Candies*, *Confections*, *Goodies*, *Lollipops*, *Sweeties*, *Toffees*, etc. "Sweets" is in fact a general term including all kinds of confectionery, even sweet puddings, pastry, but especially *Boiled sugars*, such as drops, sugar sticks, toffees (see p. 122); and *Pan goods*, such as lozenges, comfits, etc. (see *Lozenges*); also Chocolates, Gum goods, such as jujubes, gelatines, etc., most of which are separately described elsewhere.

Some doctors argue that sugar ruins the teeth, others oppose this view, and quote the case of negroes in the West Indies who eat large quantities and retain splendid teeth; but it must be remembered that the raw sugar used by the negroes has not been refined nor treated with chemicals, colours, flavourings, etc.

"*Sweets*," says W. W. Hall, A.M., M.D., "are the necessities of childhood and youth; hence Providence has wisely implanted in the young an almost insatiable desire for sugar. Without this element largely mingled with its food, the healthiest born infant would die in a month. In vain would it nestle on its mother's bosom; in vain its exposure to the warming sunshine; and in vain the

softest blankets and warmest furs to encase its body, for the warmth which sustains human life comes from WITHIN, and must be generated by the internal combustion of carbonaceous food, as found in all sweets and fat. It is the most inveterate of all prejudices in civilised life that '*Sweets hurt Children*,' on the contrary, they are a prime necessity, and to deprive them of their Candies, if pure, *is barbarism*."

Good cane sugar will hurt no one, it is the impurities introduced in manufacture that hurt. As, says Voltaire, "certain simple words and ceremonies will effectually kill a flock of sheep, *if administered with a sufficient quantity of arsenic*."

Some sweets have cavities in them which are supposed to contain spirit, but it is usually only a flavoured syrup.

Deleterious colourings are the chief things to be guarded against (see p. 285). *White* sweets are generally unobjectionable, but zinc is one danger, and they in common with others are sometimes weighted with *terra alba*, besides being often made in great part from impure glucose. *Red* is often obtained by using *red lead*, bisulphuret of mercury, or bisulphuret of arsenic; *green* is sometimes coloured with *verdigris* or arsenite of copper; *yellow* with iodite of lead or yellow ochre; *blue* with Prussian blue, or litmus, which latter is often adulterated with arsenic and a preparation of mercury. Mineral colours or substances should always be avoided in foods.

The safest and least pernicious of artificial stains and colours are vegetable substances, the juice of leaves, flowers, and berries.

Quite a surprising variety of tints can be given by a skilful workman with sugar alone.

Amber, fawn, and brandy are easily represented by burnt sugar; *green* may be obtained by digesting in spirit the leaves of parsley, spinach, etc.; *yellow*, from a tincture of saffron or turmeric. Other colours may be got from logwood, cochineal, etc. (See *Colours for Foods*.)

The manufacture of Chocolate sweets has been referred to elsewhere (see pp. 229 and 231). In making the familiar *tablets*, the coating is done in oval pans which are attached to a revolving axis, and arranged with steam pipes so that they can be heated at will to any required temperature.

The tablets are placed in the pan with a proper amount of sugar or chocolate mixture, the steam is turned on, and the pan made to revolve. The heat softens the coating material and renders it sticky, and it adheres to the tablets as they are tumbled about. The heat is then again reduced, and the coating builds up evenly on the tablets.

Finally, when the pans have become cold, the tables are rotated in the pan until suitably polished and hardened. Each firm has its own composition as the coating material.

The legal definition of the term "sweets" is "any liquor made from fruit and sugar, mixed with any other material, and which has undergone fermentation in the manufacture."

Special Manufacturers.—Batger & Co., London; J. Terry & Sons, York; and the Compagnie Francaise (London Works: Bermondsey New Road, London, S.E.).

Swine, Bacon Curing, etc.—(See also *Pigs*, *Bacon*, *Pork*, etc.)—The general appearance of a bacon factory is of a large building with a variety of departments, and these are so arranged as to fit consecutively the one into the other in rotation. This saves labour of handling. Of course, such a large concern as a modern bacon factory requires competent management, and managers are expected to be accomplished in many ways. They must first of all be able to judge pigs, and to cure and select bacon. That entails experience, for nothing but the actual work itself will ever teach a man this business. The distribution of bacon factories in England is very unequal, and they are confined mostly to the South. In fact, a line drawn between the Thames and Severn would include most of them. In Ireland the factories are very large and very few. There are three in Cork, four in Limerick, one in Tralee, three in Waterford, one in Dundalk, two in

SWINE—(continued).

Dublin, and two in Belfast. As a matter of fact, Ireland also ships some 20,000 live pigs per week to England for bacon-curing and other purposes. Now let us compare the little country of Denmark, with its three million inhabitants, against our forty millions. Twenty-five years ago there were very few factories in Denmark; now there are 26 co-operative factories and 22 private factories—a total of 48 in all; and in these 1,200,000 pigs are killed per annum, nearly all for export to England, the dumping-ground for the bacon of the world (see also p. 318). Denmark, therefore, sends us on the average about 40,000 sides of bacon per week. Canada also has built, and is building, many factories, all with a view to supplying the English market. In fact, whether it is in Ireland, in Denmark, or in Canada, the new factories are built primarily to supply the English market. It is idle to say that we cannot cure bacon for ourselves. We can grow pigs as cheaply, and produce as good or better bacon in England, as any country in the world. Look again at the United States (p. 40). Bacon-curing is a national industry there. In 1899 we paid the United States 10¼ million pounds sterling for bacon and ham alone, showing that we must have pig products. In America they speak of hogs as other countries do of their sugar, coffee, and general exportable staple crops; and even when packed and cured they occasionally compute the produce by the acre. Thus, the *Louisville Courier* stated recently that there were "five or six acres" of barrelled pork piled up three tiers high, in open lots, and not less than six acres more not packed, which would make eighteen acres of barrels if laid side by side, exclusive of lard in barrels, and pork bulked down in the curing houses, sheds, etc. Besides the above slaughtered hogs, there were five or six acres more of live hogs in pens, waiting their destiny.

Modern operations in the bacon factory are carried out in a regular order so as to avoid handling as far as possible, and get through the work quickly. The process is as follows:—A chain attached to a friction hoist is lowered into the "shackling pen," which is a small pen opening from the pig-styes, and into which the pigs are driven one by one. At the end of this chain is a ring, and to this is attached a chain-hook with two lugs. This chain-hook has also a ring at the end of it, and through this ring the chain is made to form a hoop, which is slipped over one of the hind legs of the pig. Instantly the friction hoist is set in motion and the pig hoisted. The unoccupied lug of the leg chain is dropped on to an overhead track bar, and immediately a knife, about 9 inches long, is thrust into the neck of the pig in the direction of the heart, so as to sever the aorta or main blood vessel. The pig is pushed along the track bar into the "bleeding passage," and in a few seconds all the blood has run out. This process is repeated *ad libitum*. The next operation is to scald the pigs so as to remove the hair. This hair is a valuable commodity, and the stronger portions which grow in the ridge of the back are often cut off before scalding takes place, so as to be preserved for tooth and other brush making. Good "bristles," as this hair is called, are worth about 9/- per lb. The scalding takes place in a long square tank, into which the pigs are rolled from a "dumping" table, on which they have been dropped in order to allow of the removal of the leg chains. The body of water in the tank is sufficient generally to hold five pigs at one time, and is at a temperature of from 140° to 180° F., according to the size of the pigs to be dealt with. The pigs are rolled round in this tank until the hair comes away easily in the hand. They are then tilted on to a "scuttling table" by means of a "cradle," and either scraped clean by hand or by a scraping machine. A "gob" hook or double-lugged hook is then inserted into the apex of the lower jaw, and the pigs are suspended head upwards to a track bar passing beneath a vertical singeing furnace. One by

SWINE—(continued).

one the scraped pigs are hoisted up through the fire of the furnace, where they are allowed to remain for 25 seconds. They are then lowered again on to the track bar, and either thrown on to a table and dashed with cold water or plunged into a cold bath. Both operations are intended to cool the carcases. The object of this singeing is to harden the fat and the rind, and it also imparts a peculiar flavour to the meat. So much do some people believe in this that they sacrifice the possible profit to be got from the hair, and singe the pig with the hair on. The burnt hair intensifies the desired flavour. In Wiltshire the general custom is not to scald bacon pigs; in Ireland and Denmark it is universal to do so. As soon as the burnt carcases are cool the hind legs are slit so as to expose the sinews, and behind these are inserted the ends of gambrels or spreaders, to which are attached bar hooks with double lugs, and by means of a hand or friction hoist they are raised to the track bars head downwards. All the subsequent operations take place on the track bars until the sides are lifted down so as to be cured. First of all, water sprinklers play upon the carcases whilst they are scraped clean. When clean they are opened, and the intestines taken out and assorted. This offal produces many things, and is dealt with in various businesses. The liver is separated, and is generally exported to Germany for the making of liver sausage (*Leberwurst*, p. 828)—a commodity which might with great advantage be made in this country. The stomachs are separated, and from them the pepsin manufacturer extracts the pepsin, which is used so extensively as a stimulant to digestion by those unhappy people who require it (p. 706). The smaller intestines are assorted and cleaned by a long and careful process, and are used by sausage makers for sausage making. The larger intestines are used for liver sausage making, and are mostly exported. On the small scale, where the quality of offals is not great, the intestines and stomach are cleaned, cooked, and sold in the cooked state as "chitterlings." The heart, liver, and lungs, being cut up into slices, are mixed together and sold as "pigs' fry." When the offal has been removed and the carcases cleaned, they are pushed along the track bars into the hanging house. Here they are allowed to hang for a few hours, so as to get rid of the animal heat. They are also weighed, and a deduction of 2lbs. per side is generally made for shrinkage in cooling. This is what is known as "dead weight." The pig, as weighed, comprises head, feet, two sides, and kidney fat; and upon this weight payment is made, generally the same day. As soon as the carcases are fairly cool they are split down the back, and the back bone or vertebral column is removed. The sides are then separated, and feet, head, and kidney fat having been removed, they are slid along the track bars into the chill room. It is essential in every bacon factory to have a refrigerating machine competent to cool the chill room when full down to 38° F., and to reduce the meat to that temperature.

Curing Bacon.—The whole work of the factory depends upon the proper chilling and cooling of the meat, and the maintaining of a constant temperature of 40° to 42° F. in the cellar. It is, therefore, altogether desirable that much attention should be given to the selection of a refrigerating machine, and when selected it should be in duplicate, if possible; also in chill rooms and cellars there should always be a duplicate system of cold air circulation and cold brine storage. The old style was to put a large store of ice—say, several hundred tons—over the cellar, and from the cold produced as the ice melted the temperatures were kept low. But that system, with all its difficulties, has passed away, and given place to the modern system of refrigerating machinery. When the sides have been cooled down to 38° F. they are run along the bars into the cellar through a door from the chill room to the cellar, and then the process of curing really begins. The process of curing or salting bacon is a very simple one, but it is also a thoroughly scientific one. The

SWINE—(continued).

following is a description of the process in somewhat technical language, but it conveys actually what takes place:—"Salting, as commercially practised, is a process of osmosis or diffusion; a crystalloid applied externally, either as a solid or in strong solution, diffuses into the interior, while the soluble albuminous matters pass out into the brine. Soluble mineral salts and sugar also act as partial desiccators by their affinity for water. The flesh is deprived of a great part of its putrescent constituents, but, at the same time, loses a corresponding nutritive value (Liebig estimated the loss at one-third to one-half), and leaves nearly insoluble fibrinoids, partially hardened and less digestible—'induratas sale,' as Pliny says (*Hist. Nat.*, xxviii. 20)." Deprived of technicalities, this simply means that we destroy a certain proportion of the meat in order to preserve the remainder, and in the process we render the remainder more difficult of assimilation than it was when fresh. Salted or cured meats, therefore, are less valuable as food than fresh meats. But, as it is impossible to conduct the human economy on fresh meats, it is not likely that a general knowledge of this fact would alter the consumption. The displacement of the albuminous compounds referred to is termed "curing," and is carried on thus:—The sides are laid on benches and pumped in about 17 places with a pickle testing 100° on the (Douglas) salinometer at 60° F. The pumping pressure should be 40lbs. per square inch, as indicated on an ordinary pressure gauge. The sticks of the pump needle are all into the fleshy parts, the thin flank not being pumped at all. The pickle used consists of 55lbs. salt, 5lbs. saltpetre, 5lbs. antiseptic, and (in winter only) 5lbs. of pure cane sugar. These ingredients are made up to 20 gallons with fresh water, and stirred until the whole are dissolved. The pickle is then allowed to settle until clear, and is better if it is boiled and skimmed. In any case, the clear pickle is run into the cellar, and is not used until it is of exactly the same temperature as the cellar. Immediately after the sides are pumped they are laid down rind downwards, and covered lightly with an equal mixture of dry antiseptic and fine saltpetre. On top of this is laid a heavy layer of salt, the sides are "stacked" one on top of the other, and the thin flank, or belly portion, is kept up by means of oak staves. The pickle, therefore, which naturally forms, collects in a sort of saucer formed by the ribs. The stacks are not meddled with until their cure is complete, which is in ten days for nine score, and twelve days for ten score pigs. After that time in salt the bacon is "struck," and, according to the market to be supplied, is drained, washed, trimmed, and sent off. Much of the bacon consumed in England is smoked, and many factories have facilities for smoking. The smoke stoves want a good deal of watching and care, and should always be under a competent man. Cured bacon is drained from seven to ten days, and is then washed, wiped, and trimmed. It is next dusted over with pea meal, and hung in the smoke stove for three days at a temperature of 85° F. The smoking material used is oak sawdust. After the bacon is smoked it is packed up in bales with clean barley or wheaten straw between each side, and is sent out. When the bacon reaches the provision shops it is cut up into recognised sections; there, so far as we are concerned, its history ends. An equally important addition to bacon-curing is ham-curing. This industry is limited in England, because of the difficulty of getting rid of the remainder of the carcases. The two legs forming the hams bring a very high price by themselves, more especially in Paris. It, therefore, pays well enough to dismember the pig and convert it into hams, Cumberland cut bacon, rolls, etc. The cure is on precisely the same principle as bacon-curing, and the same curing materials are used. But if taint is to be avoided, "purging" has to be done, so as to get rid of blood in the blood vein. The general rule, so far as time for curing is concerned, is to allow one day to every pound weight, adding on three clear days for "purging." In most bacon factories where hams are cured they are dried also, another opera-

tion which is conducted very slowly at a temperature of 80° F. If pale dried hams are wanted quickly they are dried in the smoke stoves at a temperature of 95° F. for three days. Of various cuts of bacon there is no end. Every locality seems to have its own peculiar cut, and this is very confusing and very useless; but there is a tendency to increase rather than diminish the various cuts. If all bacon was simply designated with the name of the country or town in which it is cured the distinctions would be in reason; but at the present time "Wiltshire" bacon is made anywhere, "York" hams are made mostly in Dublin and Cork, and so on. Besides bacon and ham curing, there are also other industries carried on with bacon-curing, such as lard making and sausage and pork pie making. These operations are long, and require skilled labour to be remunerative. Lard is, indeed, a product of great value, and the price depends greatly on the manner in which it is turned out.

Sausage making also is an auxiliary department to which much profit is attached. One cannot but be struck with the enormous number of products that come from the pig. To mention only a few, we have bacon, hams, lard, lard oil, stearine (used for margarine), albumen from the blood, tooth brushes from the bristles, glue and gelatine from the bones, yellow prussiate of potash from the toe nails, hair for bedding, chair-stuffing, etc., sausages, pork pies, brawn, pepsin, leather used for saddles, tyres, purses, bookbinding, etc. The multitude of products is bewildering, and one can only contemplate with wonder that the pig is so persistently neglected as a factor in the economy of the farm. The pig is a scavenger which converts into useful food all the useless waste of the household—the friend of the rich as well as the poor. In the United States and Denmark we have seen that pork products are manufactured to enormous extent for export to England, and we go on complacently paying these enormous sums from year to year for commodities we could largely produce ourselves. It seems that this question is not properly appreciated by the large body of agriculturists, for, if it was, there would be more effort to emulate our friends in the Western world, as well as those nearer home—in Denmark.

Swiss Cheese.—Cheese forms one of the most important agricultural industries of Switzerland, and the annual export is about 250,000 quintals, worth £2,000,000, and the demand for the better qualities is increasing yearly, but the lower qualities seem to be little called for.

There are several varieties made, the principal of which are *Gruyère*, *Neufchâtel*, *Emmenthaler*, and *Schabzieger*, or green cheese, all remarkable for their peculiar flavours.

They keep best in a cool cellar, but extremes of either cold or heat are to be avoided; also draughts. In storing never pile them more than two high, or the bottom one may be injured. Never let one stand on its edge, or it may crack or break the inner side. Always cut with a wire. Cut loaves should be covered at night with a cloth damp with salt water, or, in fly time, with vinegar. This will prevent the cheese from cracking or getting dry.

Each kind is more fully described under its respective title.

Swiss Milk.—See *Condensed Milk.*

Swiss Tea.—F. *Falltrank*, *Vulneraire suisse.*

An infusion of several herbs of the genus *Achillea*, especially *A. moschata*, *A. atrata*, *A. nana*, and *A. nobilis*, all of which are common to the Swiss Alps.

Swizzle Sticks.—Used for mixing the ingredients and putting a frothy head on various liquids, such as American cocktails, boiled chocolate or cocoa, etc. Sold about 6/- a doz.

Syphons.—Bent pipes or tubes used for drawing off liquids, such as wines, oils, etc., without disturbing the sediment.

Syracuse.—A rich and muscadine red wine made in Sicily from grapes grown on the borders of Syracuse. The name is also applied to a white liqueur.

Syrup.—(See also *Golden Syrup*, *Fruit Syrups*, *Starch Gum*, *Table Syrups*, *Capillaire*, etc.)—This is extensively employed in preparing cordials, nectars, orgeats, liqueurs, etc., by infusion instead of by distillation.

Proper syrups are solutions or liquors (prepared by infusion, percolation, etc.) of various substances nearly saturated with refined cane sugar. In making them care has to be taken to accurately adjust the weight or volume of the finished product, as directed. If this precaution be neglected, the syrup may be too strong or too weak in sugar, in the former case some of the syrup will crystallise out on standing, and in the latter the syrup will be liable to ferment. Weak solutions of sugar form a very favourable nutrient medium for the cultivation of moulds and bacteria.

To Make an Ordinary Syrup.—Beat up the white of an egg into a froth, and well mix with 3lbs. of lump sugar diluted with 3 pints of cold water. Put the mixture into a pan over a steady stove or fire, having a little cold water at hand to prevent the syrup boiling over. Let the sugar rise three times, each time checking the boiling over by a little cold water; the fourth time completely skim, and so continue till all the froth is cleared off. Finally strain through a flannel or hair-bag.

Or, dissolve 5lbs. refined sugar in 2 pints of hot water, and add, after cooking, as much water as will make the weight 7½lbs. The specific gravity will be about 1·330. Syrups should never be kept long in warm places, and the water used should always be boiled first.

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Tabasco Pepper Sauce.—This is a special favourite in the United States and in "Storyland to Sunset Seas" we are told how it was originally introduced to public notice, in 1868, by Mr. E. McIlhenny, of New Iberia, Louisiana, who began both to grow the peppers and make the sauce. It appears that at the close of the Mexican campaign that gentleman procured, through a soldier friend returning from Mexico, a few pepper plants of a species peculiar to the State of Tabasco. These plants have since been multiplied until now some 30 acres are devoted to their culture. The seed is sown in March, and the pickings begin in September. The pods are only about ¾ of an inch long, but intensely red and hot. They do not droop from the plant like other capsicums, but grow upright, evidently being as high-tempered as the natives of their Mexican home; in fact, the very concentration of all that is demoniacal in pepper. The sauce consists of the extracted pulp, with other preservative.

Tabasco Catsup is the title given to a delicious game, fish and oyster sauce manufactured by Mr. George Bayle at St. Louis, Missouri, and is to be seen on most of the fashionable tables in England as well as in America. Each bottle is said to contain equal proportions of essence of tomato and powdered tabasco pepper, as a base.

Table Jellies.—(See also *Jellies*, *Fruit Jellies*, etc.)—Table jellies, now so much in fashion, are produced from various sources.

Calf's-foot Jelly, *Aspic Jelly*, *Apple Jelly*, *Black Currant Jelly*, and *Guava Jelly* will be found more fully described under their respective names.

Gelatine forms the base of the finer qualities, but in some, sea-weed is reduced to a pulpy state, and these, of course, are somewhat insipid. They are coloured, sweetened with cane sugar, and flavoured with more or less success, and rendered transparent by clarification with white of egg.

Table Jellies in Packets.—These have, since 1886, come into extensive use, and possess many advantages. The expense of glass bottles and breakage, and about two-thirds the cost of railway carriage, are avoided. The jelly is usually stiffer or more concentrated than bottled

jellies, and admits of the addition of about double its volume of water, or wine and water, when required for use.

There are, of course, many makers and many *qualities*. Indeed, some of the lower-priced jellies forced into the market are little better than coloured *size*, and retailers who respect their trade should take care to purchase from reliable firms only.

Table Salt. — (See also *Salt.*)— Usually put up in bottles, earthenware jars, paper packets, or calico bags, containing from 1lb. to 6lbs. each. In producing the finest qualities, the brine is submitted to a heat of about 226° F., which is the boiling point of brine, when granular crystals will form on the top, but eventually subside to the bottom of the pan. It is afterwards thoroughly dried, ground very fine, and packed.

Although a somewhat popular condiment, it lacks much of the flavour of common salt; of course, it attracts moisture readily, and soon spoils if not kept in a perfectly dry place. Anyone retailing much may easily dry, crush, pack, and label it themselves.

Gardner's patent "Rapid" Sifter and Mixer, freed used for above. Prices, from 50/- to £100. Catalogues from Wm. Gardner & Sons, engineers, Gloucester.

Table Syrup, Amber Syrup, Ambrosial Syrup, etc.—It would pay the retailer much better to prepare these syrups himself instead of buying them from distant firms at exorbitant prices, and paying railway carriage, etc. He need only buy 8lbs. of liquid glucose at, say, 1d. per lb., and mix in 4 or 5lbs. of coloured water which would cost nothing. A pennyworth of colouring matter from the chemist would colour a gross, and another pennyworth of perfume would flavour the same.

He would then have 1 doz. lbs. of ordinary syrup, which he could fill into a dozen empty glasses or jars and then label them Table, Amber, Ambrosial, Capillaire, or whatever fanciful name he pleased. He has as much right to do so as any one else, and his name would be better known than many of them. Supposing the glasses, labels, and covers cost 1/-, the total outlay would be within 1/9 and the saving over 4/- per dozen in *first cost*.

A few fancy labels can easily be procured from colour printers.

Some "refiners" have been in the habit of adding a little molasses to imitate "Golden Syrup," but it is no longer allowed to be labelled and sold as the latter.

Table Waters. — See *Aërated Beverages*, *Mineral Waters*, etc.

Tablet or **Caked Tea.** — (See also *Teas*, *Brick Tea*, *Log Tea*, *Puerh Tea*, *Tile Tea*, *Chinese Tea*, etc.) — Tablet tea has become a very popular form of tea in Russia and Siberia, where it is called *Plitotchnya tchai*. The best is of much superior quality to the brick tea and tile tea described elsewhere. Tablet tea is nearly all packed at Kiukiang, in Canton, by Russian firms. Two qualities are manufactured at Hankow: the inferior from common tea-dust, which adheres after being steamed in a sort of pudding cloth and pressed by hand; the superior is made from the finest tea-dust procurable, the selection of which is the work of skilled experts. The price paid at the factories for the dust varies from 10d. per lb. upwards, while that used for brick tea (that nauseous compound which plays so large a part in the trade between China and Russia) costs only about 2d., and for tile tea about 1½d. per lb.

The best is manufactured by steam machinery, and the tea is not moistened or softened by steam, as with the other compressed teas. *Dry* tea-dust is poured into a steam mould on a steel cylinder, and the hydraulic pressure brought to bear is about two tons per tablet, which renders it perfectly hard and solid, and something like a block of chocolate in appearance, particularly as the tablets are also marked or divided into similar small portions. Each tablet of tea weighs about 110 grams, of about 15½ grains to the gram.

Great care is required in the manufacture and packing, and the cost is comparatively high. The tablets are

wrapped first in tinfoil, then in expensive and attractive paper wrappers, and finally packed in tin-lined cases for export to Russia.

The tea, it is stated, loses none of its flavour by being pressed into tablets, and as tablet tea is only one-sixth of the bulk of leaf tea, it is most convenient for travellers, back-woodsmen, or armies in the field, or for transporting into the remoter regions of Russia.

Tacca Starch or **Tahita Arrow-root.** —See *Arrowroot.*

Tailors' Chalk or **Talc.** — See *Soapstone.*

Tako. — A Japanese name for the flesh of the *Octopus vulgaris*, dried and sold for food.

Tallow. —Da. *Tælg;* Du. *Ongel;* F. *Suif;* Ger. and Sw. *Talg;* It. *Sevo, Sego;* Lat. *Sebum;* Pol. *Zoy;* Port. and Sp. *Sebo;* Rus. *Salo.* (See also *Mafurra Tallow, Singapore Vegetable Tallow, Shea Butter, Waxes,* etc.)

Tallow is the common name for suet, or the fat of sheep and oxen, when "rendered" (that is, melted), and liberated from its natural fibrous tissue. Large quantities are imported yearly from Russia, River Plate, and Australia. That from Russia is nearly all from beef, while the two latter are mostly from mutton. The chief grades of Russian are commercially known as Y. C. (yellow candle) and a better kind marked P. Y. C. (prime yellow candle). But America exports more tallow than all other countries combined.

The constituents of tallow are about 61 per cent. of stearin, 33 of olein or tallow oil, and 6 of palmatin. When pure it is nearly white and tasteless, but it is frequently adulterated with bone fat, cotton-seed stearin, "recovered grease," and various mineral substances. The quality called *Town Tallow* is usually obtained from kitchen fats, bone grease, etc.

The best tallow is largely used in making soaps, the inferior in making candles, grease for machinery, dressing leather, etc., and sometimes by salt-boilers for the purpose of imparting a large grain to the salt. Its use for "tallow candles" has, however, largely decreased since the introduction of newly discovered vegetable fats, waxes, and oils, also of gas, petroleum, and electric lights.

Its value depends partly on its freshness, partly upon the animal from which it is extracted, and partly upon the care taken in clarifying it.

Tallow Oil is the fluid olein which exudes from the tallow when pressed for the stearin.

Tamara. — A mixed spice used in Italian cookery, and consisting of 2 parts each of cloves, cinnamon, and coriander-seed, with 1 part each of aniseed and fennel seed.

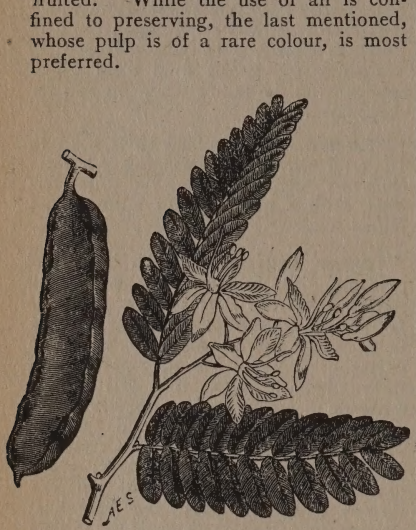
Tamar Indien. —Dr. H. Hager represents this as Tamarind pulp, 450 parts; sugar, 40 parts; sugar of milk, 60 parts; glycerine, 50 parts; senna powder, 50 parts; anise powder, 10 parts; oil-sugar of lemon, 3 parts; and tartaric acid, 3 parts. Mix well to form a plastic mass, divide into oblong tablets 1½ inches by 9-10 inch, and sprinkle with the following powders: Cream of tartar, 5 parts; sugar, 35 parts; sugar of milk, 35 parts; tragacanth, 3 parts; tartaric acid, 2 parts; red Saunders' powder, 25 parts. As soon as the tablets are dry they should be wrapped in tinfoil.

Tamarinds. — Ar. *Umblie;* Da., Du., and Ger. *Tamarinden;* F. *Tamarins;* Hin. *Umli, Tintiri;* Ind. *Ambli;* It. and Port. *Tamarinhos;* Sp. *Tamarindos.*

This preserved fruit, resembling jam, consists of the pods, pulp, and seeds of the tamarind tree, *Tamarindus indica*, of which there are several varieties, both wild and cultivated.

The name is derived from the Arabic words "tamr" (date) and "hindi" (Indian), and the specific term "indica" only reiterates the fact that the fruit is native to India. Tamarinds are imported, in casks about 3 cwt. each, from several tropical countries, particularly India, Africa, and Central America, forming a reddish-brown moist sugary

mass, more or less freed from the shelly fragments, but containing strong fibres and brown shiny seeds, enclosed in a tough papery membranous coat, with a fine juicy acid pulp. In India there are three leading varieties, viz., the sour-fruited, the sweet-fruited, and the red-fruited. While the use of all is confined to preserving, the last mentioned, whose pulp is of a rare colour, is most preferred.



TAMARINDS.

The tree usually grows 60 to 80 feet high, with spreading branches. Its leaves are compound, having 10 to 20 pairs of small oblong leaflets, which form a dense shade, and are often used in Indian curries. The leaflets are very sensitive, closing in the evening or in cold moist weather. Its flowers are white at first, but afterwards turn yellow, with purple and brown stamens, and are exceedingly fragrant.

In the West Indies the brown or red fruit, or leguminous pods, are 3 to 4 inches long, flat, and thick, with a hard, brittle, exterior shell when ripe, and contain three or four flat, angular, and hard shiny seeds, embedded in a dark fibrous acid pulp as already described. When the pods are thoroughly ripe, which is known by the increased brittleness of the shells, they are picked, and the seeds, with the juicy pulp, are shelled out and the whole put into a cask, with alternate layers of boiling syrup or sugar, till full. After becoming cool the cask is headed up and is ready for shipment. But the more desirable plan, as is mostly adopted for private use and sometimes for sale, is to pack the fruit, freed from the shells, with alternate layers of sugar in stone jars.

The *East Indian black tamarinds* are, however, far the best. They are longer than the West Indian, darker in colour, richer in saccharine pulp, and drier, and are preserved without any further addition of sugar. The seeds are 6 to 10 in number, and softer, and when these are boiled or soaked in hot water they produce a very agreeable cooling and laxative beverage known as *Tamarind Tea.*

Tamarinds should always be chosen free from mustiness, seeds should be hard, flat, and clean, the fibrous strings should be tough and entire; and if a clean knife, or other bright iron, be thrust in among the tamarinds and left there an hour or so, it should not receive any coating of copper. The taste of the pulp should also be agreeable, sub-acid, and refreshing. Tamarinds are mostly used in making sauces, by boiling in water or vinegar. They are also often boiled in water, and strained for use as a cooling and refreshing fever drink. They may be easily filled into small bottles or jars for retail purposes, but should be kept covered in same way as jams.

Importers.—The Pure Cane Sugar Co. (J. Philip & Co., agents), 4 Fenchurch Buildings, London, E.C.

Tamarind Chutney. — (See also *Chutneys.*) — A dark coloured kind of paste chutney made in Bombay. It is moderately hot, and possesses a sweet tamarind flavour.

Tamarind-Fish. —A preparation of white pomfrets, a famous Indian fish, which is much esteemed as a breakfast relish. The fish are usually cut in transverse slices, and preserved in kegs with the acid pulp of the tamarind fruit.

Tamarix.— A well-known genus of trees, the bark of all of which is slightly bitter, astringent, and tonic. In Denmark, it is used instead of hops for making beer. Galls are formed on *T. furas;* and the Arabian manna, consisting of pure mucilaginous sugar, is formed on *T. gallica.*

Tammy or **Tamis.**—F. *Rapatelle.* A kind of horse-hair cloth often woven and used in making small sieves, bolters, strainers, etc., as *Tammy-sieves.*

Tamping.—A kind of Chinese oil-cake, made from a large white pea, and extensively imported into Shanghai. *Tamping* is also a Malay term for a package, and "Sago tamping" is baled sago wrapped in the leaves of the pandanus.

Tan Polishes.—See p. 147.

Tangerine Oranges. — (See also *Oranges.*)—These small seedless oranges are considered to be a sub-variety of the Mandarin, but are more pear shaped, and in size somewhat larger than a walnut. Those from St. Michael's are the richest in flavour.

Tangerines have suffered much in quality of late years owing to the efforts of cultivators to increase the yield of the trees. This fruit reaches English markets from November till March.

Tangle. — A kind of seaweed *Laminaria digitata,* used as food in some places.

Tangle-foot.—A slang term in the United States for whisky or other intoxicant.

Tannin. — The term "tannin" really includes a large number of bodies having an astringent taste, and certain points of analogy in their reaction and constitution; but tea tannin is the astringent constituent of tea, and gives colour to the liquid. It is closely allied to the tannin of the oak bark, and is still more concentrated in nut-galls. Tannin is chemically represented by $C_{14}H_{10}O_9$, and is soluble both in water and alcohol. It has a bitter taste, and possesses the property of combining too readily with animal membranes or albuminous foods, besides having a constipating effect on the bowels. The combination of tannin with fleshy meats often forms an indigestible mass almost resembling leather in toughness, and fatal results are by no means infrequent. "Meat teas" usually mean horrible dyspepsia to many delicate constitutions. Tannin does not, however, dissolve out very rapidly from the tea leaves, but after about five minutes infusion the rate of solubility increases. The injurious effects of tea are mainly due to the tannin present. It, therefore, follows that to allow tea to brew too long or to add a second water to the leaves after the first brew are both gross mistakes, because the liquor then contains a large percentage of the tannic and other organic acids most injurious to the digestive organs. (See *Theine.*)

Tanyers. — A West Indian vegetable, usually boiled and used like potatoes.

Tapers.—These long thin wax lights, used for lighting lamps, candles, gasaliers, etc., are manufactured by candle makers, by drawing the wick (which is made by the mile) through a bath of melted wax, and then passing it through a perforated iron plate, with cylindrical holes graduated to the thickness required, after which it is wound on a drum and easily cut to the length desired. The small coloured taper knots, used to place in writing desks, are merely single tapers twisted into small space.

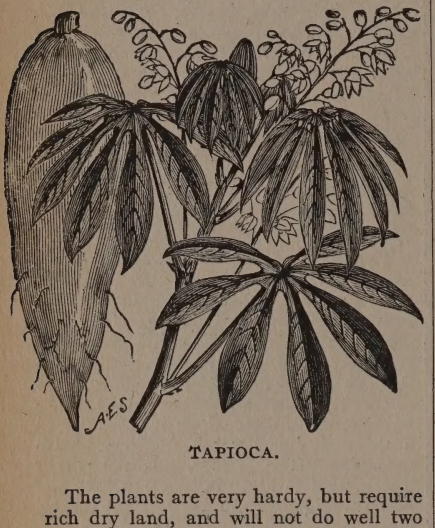
Tapioca or **Cassava.**—F., It., and Sp. *Tapioca;* G. *Sago* (*aus Kartoffelstarke*).

Sometimes miscalled *White Sago,* is a farinaceous substance derived from the large knotty roots or tubers of two species of South American manioc plants, the bitter cassava and the sweet cassava, known respectively as *Manihot utilissima* and *M. aipi,* both of the Euphorbium tribe, which, perhaps, includes the most venomous botanical growths in nature.

Tapioca is raised chiefly in Brazil, but also extensively in the eastern Straits Settlements, in Penang, Singapore, and in the Mascarine Islands.

TAPIOCA—(continued).

It has been an object of cultivation from the most remote times by the populations of all tropical countries. An increasing quantity is now being produced in Annam and principally in the province of Quang-Nam. The total cost of planting and cultivating in Quang-Nam is only about £15 per hectare, while the crop is worth about £40, so that it pays well.



TAPIOCA.

The plants are very hardy, but require rich dry land, and will not do well two years in succession on the same ground. The cultivation is from cuttings and is very easy, often yielding 42,000 kilograms per hectare of ground. It is a woody plant with slender stalks, grows to the height of 5 or 8 feet, and is known as the cassava or manioc plant. It has smooth, palm-shaped leaves, and bears small green flowers, which grow in clusters, with an immense fleshy root, each root gives about 7lbs. of little tubers the first year, and 12 to 20lbs. the second year, and even 30lb. to 50lb. roots are not uncommon, but the soil soon becomes exhausted.

The tubers or turnips resemble large parsnips, and grow to perfection within six months. When washed, peeled of their dark rinds, they are grated into a pulp, which is subjected to pressure in a screw press under water and in a kind of bag made of rushes. The crude juice which is forced out contains a poisonous amount of prussic acid, and this is commonly employed by the Indians to poison the barbs of their murderous arrows and spears. This poison is found more particularly in the juice of the plant, a small quantity killing birds, quadrupeds, and even man himself, causing cold perspirations, great swellings, and convulsions, generally ending in death; but this deleterious substance is so highly volatile if exposed to heat, or even to the open air for about two days, that its poison is entirely dissipated. When all the juice or starchy matter has settled to the bottom of the water, it is removed and again washed and dried in the sun. In this condition it is called "moussache," but it is afterwards roasted and stirred well with an iron rod, till finally dried off on warm plates. The heat having partly burst the grains, these are found to be more or less agglomerated in irregular semi-opaque gum-like masses, and by repeated siftings of this fecula several grades or sizes are separated and classified as flake tapioca, Bullet, Medium, and Pearl tapioca, and the powder becomes Tapioca flour. (See also *Stick-flour*.) The pulpy mass left in the rush bag, being dried, is called *Conaque*. This is made into *Manioc flour* or *Cassava bread*.

Pearl or Bullet tapioca is often imitated or adulterated with pellets made of potato starch. Tapioca itself is a very starchy food; it is not very nutritious; but potato starch is a much cheaper and inferior article.

It differs mainly from *Brazilian Arrowroot* or "*Moussache*" in having, as above shown, undergone a partial conversion into dextrine by being roasted and dried upon hot plates instead of in the sun only. (See *Cassava, Mandioca, Yucca*, etc.)

Tapioca is used in the same way as sago, but requires to be previously steeped for some hours, or to be sim-

mered for a long time. For soups and broth the small crushed tapioca is much better suited than either the bullet, pearl, or flake varieties, and should only be added a short time before serving, so as not to spoil its transparency.

The East Indian tapioca is generally packed in bags of about 100lbs. each; but that of South America, commercially known as *Rio* tapioca, is usually packed in barrels of about 200lbs., and is considered far superior in quality.

Special Importers.—Hedley, Gamble, & Crosfield, Circus Street, Liverpool; Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool.

Tapnet. —A sort of basket made of rushes, etc., in which figs are often imported.

Tar. — Da. *Tiære;* Du. *Teer;* F. *Goudron;* G. *Theer;* It. *Catrame;* Lat. *Pix liquida;* Pol. *Smola gesta;* Port. *Alcatrao;* Rus. *Degot;* Sp. *Brea;* Sw. *Tjära.*

Wood Tar, known in commerce as *Stockholm Tar*, is a dark brown or blackish semi-liquid, consisting principally of resin, empyreumatic oils, and pyroligneous or wood acid, and is mostly obtained by destructive distillation from the roots and branches of pine, fir, and larch, especially the Scotch fir, *Pinus sylvestris*, and other species when too old and dead for yielding turpentine. A large quantity is got as a by-product when manufacturing wood vinegar (pyroligneous acid); also from gas-making.

In America it is mostly made from the long-leaved *P. palustris*, especially in North Carolina, Virginia, and Georgia, but this is inferior to that made from the Scotch fir species, which inhabit most of the mountains in the North of Europe.

Tar manufacturing is a very rude process. A conical hole is dug in the side of a bank or steep hill, and an iron pan is fixed at the bottom of the hole with its spout sticking out through the side of the bank. The conical hole is next packed closely with billets of wood and roots, and, being covered with turf and earth, well battered down till quite hard, is almost air-tight. The wood is then kindled, and smoulders away without flame. This converts the wood into charcoal, and the hot tar flows through the iron spout into barrels, which, when full, are headed up and marketed.

The best tar is prepared in the great pine forests of Russia and Sweden, and, being exported mostly from Stockholm, Archangel, etc., is often called after these ports.

Coal Tar, or *Gas Tar*, is a secondary product obtained, to the extent of nearly a million tons yearly, in the process of gas manufacture. *Barbadoes Tar* is the commercial term for a petroleum or mineral tar found in some of the West Indian islands. *Rangoon Tar*, often called *Burmese naphtha*, is a kind got by sinking wells 40 to 60 feet deep in the ground, where the product slowly oozes in from the peaty soil.

To remove tar, pitch, etc., from the hands quickly, rub the hands with a little butter or grease of any sort for two or three minutes, and then wash with very hot soap and water. A good deal of rubbing is, however, required.

Tar Soap. —The usual formula for this is: 20 parts of cocoa-nut oil, 3 parts of tar, and 25 parts of caustic soda, at 40° B.

Taraxacum.—The Latin name of the common dandelion. (See *Dandelion Coffee.*)

Tares, Vetches, or **Fitches.**—F. *Vesces, Gesses;* Sp. *Alverjag.*

These are common names for the leguminous plants of the genera *Vicia* and *Eroum.* They are widely cultivated for the sake of their stems and leaves as a green fodder for horses, sheep, and cattle, and are sometimes cured for hay. Horses are found to thrive better upon tares than upon clover or rye grass, and cows fed upon them to give more milk. The seed is also used largely in feeding pigeons and other fancy poultry.

The plants are annual or biennial, and there are both summer and winter varieties. They are a low spreading or climbing herb, each having some half-dozen pairs of pinnate leaflets and purple pea-flowers. The *Hairy tare* (*Vicia hirsuta*) is the best species for forage, while the *Smooth tare* (*V. tetrasperma*) is the

forage vetch best suited for sandy ground. The *seeds* are usually called vetches. Canadian vetches are said to make good bread.

Tari. — A spirituous drink obtained in certain parts of India by fermenting and distilling the juice or sap of the palm *Phœnix sylvestris*. Sometimes this juice is drunk quite fresh, and in either case it is a violent intoxicant, frequently causing death. The same tree yields Date Sugar.

Taro, Kurilagi, etc.—These plants (*Colocasia antiquorum et seg.*) form one of the chief articles of diet in the Pacific Isles, where they are largely cultivated. The tubers are boiled or baked, or made into puddings or bread, and the young leaves may be eaten like Spinach; but, like the tubers, they require to be well cooked to destroy their poisonous property and acidity. There are several varieties.

Tarragon Vinegar.—This usually consists of ordinary vinegar (acid or malt), flavoured and perfumed with the young shoots of the tarragon plant (*Artemisia dracunculus*), a common garden herb noted for its antiscorbutic, aperient and aromatic properties.

Tarragona Wine.—F. *Vin d'Estragon;* G. *Estragon-Wein.* (See also *Spanish Wines.*)

An excellent red, good-bodied wine, produced from Catalonian vines in the North-East of Spain. The country about Tarragona, on the road to Barcelona, is almost wholly occupied with wine-making.

"Tarragona" is usually very cheap (about threepence a quart in Spain), and is a very fair wine, especially when of good age. It is used very much for "blending" the wines of Oporto.

Tartar.—Obtained in a state of impurity, encrusted on the bottoms and sides of casks in which wine has been kept. It is afterwards purified by dissolving it in boiling water, and filtering it while hot. On cooling, it deposits the pure salt in very irregular crystals. In this state it is sold under the name of *Cream of tartar.* (See also *Argol.*)

Tartar Emetic.—The tartrate of potash and antimony, a valuable medicine in catarrh and lung diseases.

Tartaric Acid.—F. *Acide tartrique;* G. *Weinsteinsdure;* It. and Sp. *Acido tartarico;* Lat. *Acidum tartaricum.*

This is the acid of tartar (H_2T), or $C_4H_6O_6$, and is a white salt-like substance occurring in powder or crystals, without any smell, but with a very sour taste, and is quite soluble in water.

It is made from bitartrate of potassa, or *cream of tartar.* The tartar is dissolved in a copper boiler with water, and purified, and is next treated with 26 per cent. of powdered chalk and calcium sulphate. This is added until the liquid is neutralised and effervescence stopped, a little dilute sulphuric acid being employed to decompose it; the tartaric acid is finally obtained by filtration, and, on cooling, it crystallises.

It is mostly made in Austria and France, but also to some extent in England. There are 600 to 700 tons made yearly in Marseilles, but Italy exports from the Calabrais 5,000 to 10,000 tons yearly of tartaric materials, in the shape of half-refined tartars, vinaccia argols, crude argols, and wine-lees, and a good or bad grape harvest soon affects prices of the manufactured article.

Some cheap makes of tartaric and citric acids are apt to contain alum, tartrate of lead, and particles of common lead. Care should, therefore, be taken to avoid such as are not up to the British Pharmacopœia standard, and which, when dissolved in water, are darkened by sulphuretted hydrogen.

How to Detect Adulteration of Alum in Tartaric Acid.—Put some of the suspected tartaric acid in a solution of water, make it hot in an untinned copper vessel, and let it stand all night; if when poured out it leaves the vessel clean, it is pure; if, on the contrary, small crystals adhere to the vessel, you may know that it contains alum, as alum has an affinity to crystallise on copper.

Another Test.—Dissolve a few grains of tartaric acid in a wine glass two-thirds full of water; add a few grains of acetate of lead (sugar of lead); this forms an insoluble tartarate of lead, which, from the

fact of being insoluble, renders the liquid cloudy. Now add a few drops of nitric acid, and if the tartaric acid is pure the mixture becomes quite clear, on account of tartarate of lead being soluble in nitric acid; but if the acid contains alum (sulphate of alumina and potass), it will remain still murky on the addition of the nitric acid, from the fact of sulphate of lead (formed by the sulphuric acid in the alum) being insoluble in the nitric acid.

Tartaric acid is the most valuable base of baking powders, egg powders, custard powders, and effervescing draughts, etc. It is also used in dyeing, calico printing, etc.

There are many pretentious acid substitutes on the market, both for tartaric acid and cream of tartar, but the acidity is in most cases due to superphosphate of lime and sulphuric acid, along with 10 to 15 per cent. of starch, and they should not be recommended.

Apply to Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool.

Gardner's patent "Rapid" Sifter and Mixer, freely used for above. Prices from 50/- to £100. Catalogues from Wm. Gardner & Sons, Engineers, Gloucester.

Tartarated Soda, *Effervescent.*—Correct name for *Seidlitz Powders.* (See p. 837.)

Tassajo, Jerked Beef, etc.—See also *Biltong, Charqui,* and *Pemmican.*)—Tassajo is the principal meat product of Uruguay and Argentina, in South America, and is generally made from the flesh of young bulls, three to five years old; but sometimes from that of bullocks and cows. The carcase whilst still warm is cut up into four pieces, the bones taken out, and each quarter is then hung on a rack, exposed in the open air and sun, to cool and dry. Then each slab of meat is put into strong brine for about half an hour, the blood being drawn out by this time. The slabs are then piled one upon another, and more salt is placed between each layer. In a week or so the slabs are again exposed to the sun, and afterwards turned frequently till sufficiently cured. The meat is next piled up in large stacks, and turned or repiled from time to time till wanted for shipment. It is then put into burlap coverings in bundles of about 100 kilos, and exported to Brazil, Nicaragua, Cuba, and some of the other West India islands. Its nourishing properties are stated to be 50 per cent. of its original state when fresh, the other 50 per cent. of albumen, etc., being lost during the curing process. Some 870,000 head of cattle are slaughtered for this purpose yearly in Uruguay, of which about 4,000 are slaughtered in Monte Video. Before using the meat it is soaked in cold water for about 12 hours to remove the salt, or put into hot water, rubbed well, and then washed in cold water.

Tazma or Ethiopian Honey.—A sort of honey deposited, without wax, in subterranean cavities in certain parts of Ethiopia, by insects resembling large mosquitoes. The natives use it medicinally as a cure for sore throat, etc. An analysis of it shows—Water, 25·5; Levulose and Glucose, 32·0; Mannits, 3·0; Dextrine, 27·9; Ash, 2·5; Impurities and Loss, 9·1; total, 100.

The composition of this honey is similar to that of the Mannas of Sinai and Kurdistan, and that of the sugary matter of the leaves of the linden, as well as that of ordinary honey. It differs from all these substances in the absence of cane sugar.

Tchapati. — A sort of Indian cake prepared with crushed maize. When dried it is about three inches long. These cakes form the chief food of the bulk of the people in Hindustan, and are often made in wholesale quantities for the shops.

Teas.— Ar. and Per. *Chai;* Chin. *Cha, te;* Da., Du., and G. *Thee;* F. *Thé;* Hin. and Port. *Cha;* It., Sp., Sw., and W. *Te;* Mal. *Teh;* Rus. and Tur. *Tchai.* (See also *Packet Teas.*)

Tea appears to have been cultivated in China over 2,000 years; in Japan about 500 years; but in India only since 1840, and in Ceylon since 1880. The Spanish have tried growing it in the Phillippines; the Dutch in Java, Sumatra, and Borneo; the French in Cochin China;

TEAS—(continued).

and the English also in the Straits Settlements.

It is evident that tea was known in Europe as an economic plant in common use among the Chinese many centuries before it had a place as a commercial commodity with the nations of Europe. Just when and how it was first introduced has not been settled, but it is very doubtful whether China is to be regarded as the home of the plant, although mention of the plant and of the tea-drinking customs of China are found in the records of the earlier travellers.

Confucius (550 B.C.) and Yo Lu, who flourished in the Tang dynasty (618 to 906 A.D.), both bear witness to its antiquity, which was even then subject to taxation. It was known to the Arabs in the 9th century, and the leaf was used by the Japs a century later.

In the eighth century, Moorish adventurers made mention of the tea of China in their journals. In the year 1600 a Spaniard, "Texeria," noted tea as being used by the natives of Malacca. It was in general use in Persia in the seventeenth century, being mentioned by "Olearius," in 1633, as having been brought overland by the Usbeck Tartars. Possibly tea may have been known in Europe in the fifteenth and sixteenth centuries, through travellers. Marco Polo resided in China for years in the fifteenth century, and it is not unlikely that, being a merchant, his attention was drawn to the universal use of tea in that country, and he was prompted to send or take some to friends in Venice. The ships of the King of Portugal found their way to China in 1517, and it is scarcely supposable that the Chinese custom of drinking tea escaped notice.

The earliest positive record of the appearance of the fragrant leaf in Continental Europe was after the formation of the Dutch India Company in 1602. This supposition is supported by a record made in 1588 by Father Giovanni Pietro Maffei, who, alluding to his travels in China, says:—

"They yet press out of a certain herb a liquor which is very healthy, which is called *chia*, and they drink it hot as do the Japanese. And the use of this causes them not to know the meaning of phlegm, heaviness of the head, or running of the eyes; but they live a long and happy life, without pain or infirmity of any sort."

Another sixteenth century author, in a book published in Milan in 1596, and which was translated into English, says:—

"They have also an herbe, out of which they presse a delicate iuyce, which serues them for drincke instead of wyne. It also preserues their health, and frees them from all those Euills, that the immoderate vse of wyne doth breed into us."

Tea was first sent to England in 1610 by this Dutch Company, who, indeed, monopolised the business till 1834, when the trade was thrown open to all.

It is significant that Doctor Venner, in his "Via Recta ad Vitam Longam," published in 1638, makes no mention of tea. The work treats of dietetics, and mentions the nature, character, and dietetic value of the foods and drinks then in use in England. Lamb, who for fifty years was Master Cook to the Kings and Queens of England, makes no mention of tea in his "Royal Cookery; or, the Complete Court Book," published in 1710. It was advertised that year in the *Tatler;* or, rather, a "Bohea Tea, made of the same Materials that Foreign Bohea is made of, 16/- a pound."

There is plenty of evidence to show that it was an article of trade and commerce in England in the seventeenth century, and in general use early in the eighteenth, there being treatises on tea bearing date of 1730 and earlier.

In September, 1658, the following advertisement appeared in different London journals:—"That *excellent* and by all physitians approved *China* drink, called by the Chinese *Toha*, by other nations *Tay alias Tee*, is sold at the *Sultaness Head* a *coffee house* in *Sweetings Rents* by the Royal Exchange, London." This gives credence to the story that Oliver Cromwell had use for the teapot which was found in the possession of an English collector.

TEAS—(continued).

There is preserved in the British Museum a handbill supposed to have been circulated between 1658 and 1660 by one Thomas Garway, "tobacconist, and seller and retailer of tea and coffee," and who thus described the famous leaf:—"That the vertues and excellencies of this Leaf and Drink are many and great, is evident and manifest by the high esteem and use of it (especially of late years) among the Physicians and knowing men in France, Italy, Holland, and other parts of Christendom, and in England it hath been sold in the Leaf for six pounds and sometimes for ten pounds the pound weight, and in respect of its former scarceness and dearness, it has only been used as a Regalia in high Treatments and Entertainments, and Presents made thereof to Princes and Grandees till the year 1657. The said Thomas Garway did purchase a quantity thereof, and first publickly sold the said Tea in Leaf and Drink, made according to the directions of the most knowing Merchants and Travellers into those Eastern Countries; and upon knowledge and experience of the said Garway's continued care and industry in obtaining the best Tea, and making Drink thereof, very many noblemen, Physicians, Merchants, and Gentlemen of quality have ever since sent to him for the said Leaf, and daily resort to his house to drink the Drink thereof."

In A.D. 1660 the British Parliament imposed a duty of 8d. per gallon on all tea made and sold in coffee-houses, and by an Act framed in the same year the duties of excise on malt liquors, cider, perry, mead, spirits and strong waters, coffee, tea, sherbet, and chocolate were settled on the King for life. That year tea sold in England at three guineas per pound. Mr. Pepys, of the Admiralty, in his "Diary," under date of September 25th, 1661, says: "I sent for a cup of tea, a Chinese drink, of which I had never drunk before." In 1662 Princess Catherine of Portugal became the bride of Charles II., and being accustomed to the use of tea in her native land, made it a popular beverage in her adopted country.

Tea was brought into England from Holland in 1666 by Lord Arlington and Lord Ossory at a cost of 60/- per pound. In 1667 the East India Company sent 100 pounds to England. In 1619 the quantity imported into the United Kingdom was 143½ pounds, at an average price of 60/- per pound. No further record of imports was made until 1678, when 4,713 pounds were imported at the same declared value. Between 1669 and 1678 the records of the East India Company show imports of small volume in 1670-71 and 1673-74. From 1697 to 1699 an average import of 20,000 pounds was recorded, and the duty was altered in 1698 to 5/- per pound and 5 per cent. on the value, which was 30/- per pound. The initial move to make tea an article of direct commerce with China was made in 1680; but a previous shipment from Java in 1668 formed the import of 143½ pounds recorded in 1669.

THE TEA LEAF.

Tea consists of the dried buds, leaves, and stems of an evergreen shrub usually growing three to five feet high, and variously classed by botanists as *Camellia theifera*, *Thea assamica*, and *Thea Chinensis* or *Thea sinensis*.

TEAS—(continued).

(The name "tea" is also applied to infusions and decoctions of various species of plants and roots used as beverages and medicines, but these are described elsewhere in this book under their qualifying titles.)

Teas differ very much in size, form, colour, flavour, and in their chemical proportions; but it remains uncertain whether they may not all have originated from one species, and whether the apparent differences may not be attributed to differences in climates, soils, modes of cultivation, preparation, and curing, rather than to any real botanical variations. The difference between green and black teas, for instance, merely depends upon whether the leaves are young or old, and the way in which they are dried.

In China, green teas (see also "*Twankay teas*") are usually prepared by rolling and drying the leaves—preferably the young ones—quickly in copper pans and at a high temperature over a wood fire within an hour or two after being gathered; whereas, for making black teas, the leaves, young or old, after being gathered are left in heaps exposed to the sun and air for ten or twelve hours, and allowed to ferment. This decomposes the green colouring matter and deepens the hue to a dark brown.

In addition to the sources quoted at the commencement of this subject, the Americans have tried tea cultivation in some of the Southern States. Experiments in South Carolina, about Summerville and South Fraser, have been extended over some 60 acres since 1892. The bushes raised from Chinese seed, obtained from a celebrated garden near Hang-chau, appear to thrive hopefully and bear abundant leaf. The necessary cheap labour problem being partially met by training bands of negro children and the employment of machinery wherever possible, it is expected that profitable results may be obtained by developing selections of long Pekoe tips, so as to make the high-class or "Mandarin Teas," which fetch about 6/6 per lb. in China. Efforts have been made in Brazil, Natal, and even in the South of Europe; and some is now being planted in Australia and New Zealand, but many of the experiments have been failures, and little success has so far attended tea culture anywhere except in China, India, Ceylon, Japan, Java, Fiji, and Natal. Experience has shown that the sides of mountainous land, frequent and copious rains or dews, light, deep soil, a hot and equable climate, and cheap labour, are among the *sine quâ nons* of success. Tea picking is rather expensive item even in China and India, where wages are twopence or threepence a day, for a gatherer can only pluck 12 or 14 lbs. a day, and it requires about 4lbs. of the fresh foliage to yield 1lb. of dried tea leaves. (See *Packet Teas.*)

Whether China got her first plants from India or *vice versâ*, or whether they are distinct species, has not been decided; but it is known that the Indian plant (*Thea assamica*) had been growing wild in the jungle of Assam ages before it was discovered there. A story has been recorded how some Buddhist priests, going from Northern India to China on a missionary expedition, took with them some cuttings of the plant, in order to grow tea leaves, which, it was thought, would be excellent for purifying the brackish waters so prevalent in that country. It is, however, in China, India, and Ceylon that nine-tenths of the tea in the world is now grown, and from whence England draws her enormous supplies. Most of that grown in Japan goes to America. The British are, indeed, the greatest tea drinkers in the world, no matter whether they be dwelling in England, Canada, or Australasia; wherever the British flag or even the English language dominates, there the heaviest consumption of tea is found. Leaving out China, Japan, Thibet, and Tartary, where no statistics are kept, the following table shows the average annual consumption of tea per head of population:—

	lbs.
Australia	7·70
New Zealand	7·19
Tasmania	6·37
Great Britain	6·0

TEAS—(continued).

	lbs.
Newfoundland	4·41
Canada	4·72
United States	1·09
Holland	1·38
Natal	1·13
Cape Colony	0·85
Russia	0·77
Denmark	0·37
Uruguay (1884)...	0·29
Argentine (1884)	0·28
Portugal	0·13
Switzerland (1882)	0·10
Norway	0·10
Morocco	0·10
Germany	0·11
Sweden (1882)	0·04
France (1882)	0·05
Austria-Hungary (1884) ...	0·03
Belgium (1884)	0·02
Bulgaria (1884)	0·02
Spain (1884)	0·01

The United Kingdom itself now consumes nearly as much tea as all other civilised countries combined, including the whole continent of Europe, North and South America, Africa, and Australia. At least, 500 million people now drink tea, a number which greatly exceeds the worshippers of Bacchus, and it has been augured that if the supplies were suddenly to cease, and the female population of these isles to be deprived of their favourite beverage, there would be a social revolution, or at least a universal sadness throughout the land.

In several tea districts of China, Fuhkien for example, the British Consul in 1898 reports that the consumption is only about 3lbs. per head, even among the small fraction of the population who are tea drinkers.

Up to 1862 about 96 per cent. of the tea used here came from China. India then began also to send, and the imports of Chinese and Indian steadily increased till 1880, when Ceylon teas began to compete with them. Since 1880 the imports from China have been falling off rapidly, while Ceylon and Indian are coming more and more into favour.

During 1899 British India exported 159,806,000lbs., an increase of over six

THE FOLLOWING TABLE SHOWS THE TEA OPERATIONS IN THE UNITED KINGDOM DURING THE LAST THREE YEARS.

In the twelve months.	1899	1898	1897
Imports—China . . . . . lbs.	33,820,258	27,077,7 9	28.760 297
" British East India . . "	145,632,117	139 596 273	134.734,297
" Ceylon . . . . . "	102,178,697	97,613,977	96 325 578
" Other Countries . . . "	9,206,029	7,305 674	6 980.239
Total imports . . . . . "	290,837 101	271 593,683	266 800 411
Home consumption—China . . "	16,677,835	14,695.336	17,242 246
" " B.E.I. . . "	134,018,920	133,430,350	124 534.194
" " Ceylon . . "	85,137,945	82,471,745	85 493 552
" " O.C. . . . "	6,726,114	4.816,673	4,129.782
Total . . . . . "	242 560,814	235,414,104	231,399,774
Exports—China . . . . . "	11,658,988	15.786,027	19,992.024
" British East India . . "	7,723,875	7 846,500	5,711 240
" Ceylon . . . . . "	12 144,423	11.623,186	10.683 885
" Other countries . . . "	711,791	1 179,189	967,574
Total . . . . . "	32,239,077	36 334,902	37,354,723
Stocks in bond . . . . . "	113 010,000	99.476,000	100 957,000
Value of Imports	£10,751.164	£10,335,643	£10,405.084
Of which British Indian	5,608,851	5,440 703	5,450,525
" Ceylon	3.763,184	3.694 123	3,728,166
Value of exports	1,395,407	1,508,876	1,545,675

TEAS—(continued).

million lbs., as compared with 1897; and Ceylon 129,662,000lbs., as against 114,466,000lbs., or an increase of over 15 million lbs.; while China disposed of 217,467,000lbs., an increase of over 13 million lbs., so that China is still the greatest exporter, although so little of it comes to the United Kingdom.

A full description in this place of the kinds and qualities of teas coming from each country would be too lengthy and complex, but much information may be found under the following headings:—

Assam Tea.	Leppett Tea.
Blended Tea.	Lie Tea.
Bohea Tea.	Mieng Tea.
Brick Tea.	Natal Tea.
Burmese Tea.	Oolong Tea.
Caked Tea.	Packet Tea.
Caper Tea.	Pekoe Tea.
Caravan Tea.	Pickled Tea.
Ceylon Tea.	Pouchong Tea.
Compressed.	Pu-erh Tea.
Congou.	Scented Tea.
Green Tea.	Sealed Tea.
Gunpowder.	Souchong.
Hankow Tea.	Tablet Tea.
Hyson Tea.	Tea Dust.
Imperial Tea.	Tea Substitutes.
Indian Tea.	Tile Tea.
Japanese Tea.	Tonkay, or
Java Tea.	Twankay.
Kaisow Tea.	Wenchow.
Lao Tea.	Young Hyson.

Most of the tea for England comes to London. Arriving in the Thames, the tea is conveyed by lighters into the bonded warehouses, and there each package, on receipt, is numbered by a method called "scribing," which consists of scratching a semblance of numbers on the wooden chests with a special cutting instrument.

Here the tea undergoes "bulking"—that is, a certain number of chests of the same class of tea from the same garden or "chop" are emptied out on the floor and mixed up to a certain extent, and then put into the chests or boxes again, being stamped in by the men (which cannot improve the tea). Bulking is found necessary in order to ensure the uniformity of the tea, otherwise a sample taken from one chest might not agree with the rest of the tea in the other chests. Whilst the operation of bulking is proceeding the Custom House officials take the gross weight of the chests (full) and the average weight of the empty chests, and thus arrive at the net weight on which the duty (now 6d. per lb.) is calculated. Catalogues are next issued, and the prospective buyers send down to the warehouse for samples. These samples, on arrival at the buyer's office, are tasted by experts and valued, and on the strength of this opinion the buyer bids at the public sale in Mincing Lane for the tea *in bond*. The original buyer then sells it again to smaller buyers, and so at length it reaches the retail grocer, after having, as a rule, first passed through the hands of several middlemen. In the wholesale tea trade, one pound "draft" per chest is allowed—that is to say, the buyer gets, say, 100 pounds of tea, but he only actually pays for ninety-nine pounds. The tea is often "blended"—that is to say, two or three kinds are mixed together by machinery in certain proportions in large bins before it is sold retail. (See *Blended Teas.*)

Average weight in Packages.	Chests.	½ chests.	Boxes
	lbs.	lbs.	lbs.
Congou	106	61	20
Souchong	90	50	17
Oolong	—	44	19
Scented Caper	—	—	21
" Orange Pekoe	—	—	20
Flowery Pekoe and Softs	54	49	—
Twankay	—	17	12
Hyson	—	58	17
" Young	—	65	25
Gunpowder	—	66	37
" Imperial	—	60	34
Indian or Assam	96	53	21
Ceylon	94	50	18
Java	70	—	—
Japan	65	—	—

Many changes in the public taste for teas have taken place, and the Green Teas (Twankay, Hyson, and Gunpowder), as well as the Black Bohea Tea, so popular forty or fifty years ago, are now seldom heard of; and indeed a great portion of what now comes from China is *tea-dust*, which is mostly used in mixing with the Indian and Ceylon growths.

TEAS—(continued).

It has been found that these latter, especially *Assam* teas, are nearly twice as strong as Chinese sorts.

The average composition of ordinary qualities of Indian tea may be taken as follows:—General composition of black tea: Water, 8·10; theine, 3·35; albumin, 18·01; nitrogenous extractives, 5·82; dextrin and pectin, 1·21; organic acids and oil, 1·04; tannin, 17·02; colouring matter and resin, 3·21; cellulose, 35·89; ash, 6·35—100·00. Green tea differs slightly in composition from black, containing considerably more tannin and slightly more essential oil; but the only important constituents are the *theine*, the *volatile oil*, and the *tannin*. The most valuable property is the *theine*, composed of colourless crystals, without smell, but with a slightly bitter taste. It is this which refreshes or stimulates the drinker, and lessens the waste of the tissues of the human body. The China teas coming to this country are usually said to contain only about 1 or 2 per cent. of theine, while Indian and Ceylon teas contain 3 to 3½ per cent., and as much as 6 per cent. has been found in Assams; but there is great divergence of opinions on this subject, and much seems to depend on how the packages are closed. Professor J. Kochs has recently published the results of analyses of various kinds of Chinese teas sent to Berlin by the German Consul at Shanghai, all of them pure and with excellent aroma, due to the packages being hermetically sealed. His percentages of theine are remarkably high. From Souchong, 2·83; Flowery Pekoe, 4·36; Scented Tea, 3·08; Pouchong, 3·44; Congou, 3·83; Oulong, 3·66. A Brazilian tea, *Chà Morumby*, contained 3·11.

It may be here noted that recently quite a demand has sprung up in the United States for small pellets, or tablets, of *theine*, which may be carried in the pocket and used as desired.

But Indian and Ceylon teas also contain more *tannin* than the Chinese and Japanese, and this acts injuriously on the digestive and cerebral organs. It reduces the flow of saliva in the mouth, and in the stomach it impairs the action of the gastric fluids, as well as combining with nitrogenous substances in a manner analogous to ordinary tannin. Its astringent effects are also continued in the intestines. The presence of tannin may be easily seen by dropping some tea on a clean blade of a knife, when it will produce a black stain.

Another active principle in tea is the volatile oil which imparts aroma and flavour, and which can be easily distilled in perfection.

When obtained pure by distillation it is of a yellowish colour, and smells strongly of tea. Curiously enough, this oil is not to be found in the fresh green leaves, but is believed to be produced in the tea during curing.

Unfortunately, in this country housewives usually determine the strength of tea by the amount of colour or tannin rather than by the amount of theine, whereas it is the theine which is the *refreshing* property, and there is just about as much of this in medium-priced teas when pure as in the higher-flavoured qualities.

Much has been said and written lately against over-indulgence in Indian teas on account of the tannin in them; but these being so much stronger than Chinese, it is obvious a smaller quantity of leaf should be put in the teapot. For where one pound of Chinese tea only yields five gallons of tea of a certain strength, one pound of Assam will yield seven and a half gallons; and analysis has shown that Assam tea, after five minutes of infusion, yields 10·35 per cent. of tannin, while Chinese tea yields 7·80. Now, if we divide 10.35 by 7½, we get 1.38; and 7.80 divided by 5 shows 1.56. It is, therefore, evident that a cup of China tea really contains 0·18 per cent. more tannin than a cup of Indian. It is keeping the tea infused too long that brings out the tannin from the leaf into the water.

Chinese tea should never be allowed to "draw" more than five or six minutes, nor Ceylon or Indian more than three minutes, before being poured either into the teacups or some other porcelain receptacle, and the leaves thrown away. The water should also be fresh, and

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thoroughly well boiled in a clean kettle; if kept boiling too long the water becomes hard and spoilt.

The public, however, seem to like "strong" teas better than weak, thin kinds, however fragrant; for a rasping, pungent Indian Pekoe-Souchong, and thick, strong, broken Pekoe, pleases the working classes better than a choice Darjeeling tea worth four times as much.

It has been noticed that the tannin is mostly in the lower leaves and stems of the tea plant, and that the nearer the top the less tannin and the more theine. The little curled shoot supported by two leaflets at the extreme point of the twig is that which contains the essential oil, the juices which give a high-class tea its delightful fragrance and aroma. In fact, the only leaves really valuable are the three or four nearest the top of the stem. The larger and older leaves lower down the stem are coarse, woody, and very inferior. The young leaves and shoots are, therefore, best, and they may be known from old ones by size, and by the presence on the under surface of young leaves only, of numerous hairs, or fine down. What is known as "tip" consists of this hairy down on the unexpanded leaf-buds, and is a favourable indicator of quality. In the ordinary manufacture of Indian teas this "down" gets separated from the bulk of the tea during sifting and rolling, and floats about the factory, where, after it has settled down and accumulated on the walls and ceilings, it is recovered as a by-product, but it contains less theine than the tea leaves themselves.

Every true tea leaf, no matter what the variety may be nor where it may have been grown, is fairly well marked, quite enough to distinguish it from adulteration, at all events in cases where the leaves are unbroken. It possesses a serrated—that is, a saw-like or jagged—edge, with the teeth pointing towards the apex of the leaf, and any addition of foreign leaves may easily be detected, especially by the aid of a common lens.

The arrangement of the veins in the tea leaf may be noted, and when once studied will not be easily forgotten. The leaves are, perhaps, best examined if slightly pressed between two cover glasses, then heated with alkaline permanganate, and afterwards treated with HCl to remove manganese oxide. After being liquored the leaves should be of a *light brown* colour at both ends; if *black* they denote old withered leaves, and the chief things to be guarded against are the lower and larger leaves, either cut or broken into smaller pieces, also excess of dust or dirt, and the mixture of partially exhausted tea leaves. Notwithstanding the present cheapness of teas and the Customs supervision, adulterated and inferior teas are now largely imported.

As to primary market prices of tea, on July 7th, 1896, the Chancellor of the Exchequer gave much offence to wholesalers by telling Parliament that during the year 1895 the wholesale average monthly market price never rose above 9¾d. per lb., or fell below 7¾d. per lb., and that only 1·7 per cent. of the tea consumed in England was sold at a higher wholesale price than 1/- per lb. Of course this was without *Duty*, which should have been pointed out. The average price in 1899 was 8¾d. per lb. Of course when duty and other expenses are added these prices rise considerably. It has been argued, with some show of reason, that the poorer consumer of low-priced tea actually pays a heavier percentage of duty than the richer consumer pays for the finest teas, thus:—The duty being now 6d. per lb., if you drink tea for which you pay 10d. per lb., you are paying taxes at the rate of 175 per cent. on the value of the tea, and so on in the following proportions: — Common, 1/-, 150 per cent; medium, 1/2, about 130 per cent., 1/4, about 37½ per cent., 1/6, about 33 per cent.; fine, 1/7, about 31½ per cent., 1/10, about 27 per cent., 2/-, about 25 per cent.; very fine, 2/4, about 21 per cent., 2/6, about 20 per cent., 2/8, about 18¾ per cent., 2/10, about 17 per cent.; choicest, 3/-, about 16½ per cent., 3/4, about 15 per cent., 4/-, about 12½ per cent.

The above shows that a poor washerwoman, or sempstress, drinks more tea than a millionaire, and has to pay three

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to four times the *ad valorum* duty on every lb. of it.

Tea is not now found "faced" or greened with prussian blue, indigo, and lime salts, but it is mixed with the dried leaves of the hawthorn, sloe, *Chlorenthus inconspicuous*, and other impurities (see *Packet Teas*), and attempts are still made from time to time to collect old or spent tea leaves—those that have been used—re-dry them, grind them, and mix them off with genuine tea. The denatured tea leaves remaining after the extraction or manufacture of theine, caffeine, citrate of caffeine, etc., are also mixed off with genuine tea-leaves.

Retailers should always avoid tea that is objectionable in flavour; also earthy, musty, sour and coarse teas, and teas having a cedar, camphor, or drug-like odour, which is often noticeable in the wooden packages from India and Ceylon. All genuine teas keep best, and will, in fact, improve in flavour if properly packed and kept air-tight in a dry, warm room, away from soaps, cheese, oranges, apples, peppers, or other strong smelling goods. Indian and Ceylon teas should never be drunk within six or twelve months after being manufactured, on account of the rawness of tannic acid in them, but when open the sooner they are consumed the better, for they seem to deteriorate rapidly, if exposed to light and air, losing most of their aromatic strength and flavour, and are not to be recognised as the same teas in three months. Whether this is owing to more tender and rapid growth or to the quick method of making and curing by machinery is not quite known, but the volatile oil quickly escapes.

The Chinese and Japanese teas being cured very slowly, first by withering in light, heat, and air, and next by hand-rolling, fermenting, sunning, firing, and re-firing, may lose much of their original goodness in these operations, but they certainly keep much better on arrival in this country.

Those retailers who are habitually exposing tea in shop windows, etc., should remember that all teas are peculiarly susceptible to moisture, and if left open to the air they soon deteriorate; whereas, if kept airtight and in a warm, dry room, they improve during the first four years, and acquire a mellowness and aroma not obtainable in any other way. The greatest evil in tea consumption is the tendency for *low-priced* trash. This phrase has been dwelt upon under "Packet Teas" (p. 669). No retailer, actuated by a proper regard for his customers' welfare or his own reputation should pander to it. If housewives could only be got to realise the fact that genuine tea of a quality really healthy and refreshing cannot be retailed under 2/- to 2/6 per lb., but can then be made in their homes for ½d. per cup, they would at once give up buying and drinking pernicious rubbish which every doctor can tell them leads to dyspepsia, low spirits, and bad health generally. During the year 1900 the Government analyst has reported 226 cases, and condemned no less than 3,322 packages of this so-called tea, but who shall say how many packages escaped his notice? And what name should be given the large quantities of Ceylon sold wholesale in Mincing Lane at about 2d. per lb., and knowingly passed out of bond by the customs as "tea." Such leaves may be, and probably are, tea leaves, but only the old, tasteless, and musty sweepings which have withered and fallen from the bushes or been shaken or plucked from the base of the stems, and totally devoid of any value to the consumer. When the duty has been paid and a few better leaves added, the mixture is very dear at 1/- per lb. It appears the Customs have no power to stop such coarse, tasteless stuff above alluded to, so long as the leaves are tea leaves, and not injurious to health. The "Tea Act," which came into force in 1876 under the heading of the Sale of Food and Drugs (38 and 39 Vict., chap. 63, and paragraphs 30 and 31), reads as follows: "From and after January 1st, 1876, all tea imported as merchandise into and landed at any port in Great Britain and Ireland shall be subject to examination by persons to be appointed by the Commissioners of Customs, subject to the approval of the

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Treasury, for the inspection and analysis thereof, for which purpose samples may, when deemed necessary by such inspectors, be taken, and with all convenient speed be examined by the analysts to be so appointed; and if upon such analysis the same shall be found to be mixed with other substances or exhausted tea, the same shall not be delivered unless with the sanction of the said Commissioners, and on such terms and conditions as they shall see fit to direct, either for home consumption or for use as ships' stores or for exportation; but if on such inspection and analysis it shall appear that such tea is, in the opinion of the analyst, unfit for human food, the same shall be forfeited and destroyed or otherwise disposed of in such manner as the said Commissioners may direct. Tea to which the term 'exhausted' is applied in this Act shall mean and include any tea which has been deprived of its proper quality, strength, or virtue by steeping, infusion, decoction, or other means."

Sound tea retailed at 2/- to 2/6 is cheaper because it *goes farther;* and although finer flavoured teas may be had at 3/6 and upwards, the 2/- or 2/6 article ordinarily contains quite as much of the stimulating-and refreshing *theine* as the higher priced.

It has been said that the leaves should never touch metal, and although they are packed and exported in cases lined with sheet lead to preserve their flavour and keep out moisture, the tea is carefully protected by thin silky straw-coloured paper (made from the liber or inner bark of the paper mulberry, without size). This is a precaution seldom regarded by repackers and others handling tea in this country—indeed, it is quite a custom to empty it into metal or lead-lined store canisters!

Finally, as to preparing and serving tea at the table, English-speaking nations generally use a little sugar and milk or cream with the infusion, and occasionally spirits. In continental Europe also spirits are often added. In Russia, where most of the best Chinese teas go, and especially the green sorts, a little lemon juice only is added, while in China and Japan, where one would think they ought to understand it the best, and how to use it, they drink it quite clear, and never think of using sugar nor milk with tea any more than we would use treacle with champagne. They say that milk ruins the flavour, and that the tannin of the tea combines with the caseine of the milk, forming a product which is very injurious to the stomach.

The *rich* Chinese make their tea in a cup, by simply putting in a few choice leaves and pouring boiling water over them; but the poorer classes use teapots.

In making tea after the Hindoo fashion, no metal is allowed to come in contact with the beverage; a fine muslin bag, fitted with a ring, just slips over the top of the pot. The tea (one teaspoonful to five cups) is put into the bag, and the pot is filled with freshly boiled water. The bag is slipped in, and both cover and cosey are called into use. Five minutes by the watch, and out the bag comes. The tea—clear, delicate, delicious—is ready to drink.

In Persia the people drink only *black* tea, and not green.

Just as the taste for coffee has grown upon the French so has tea upon the British. Each nation excels in brewing the beverage of its choice, and there is as little likelihood that the Frenchwoman will ever learn to make tea, as that the Englishwoman will ever learn to make coffee properly.

We Britishers drink more tea than our parents; we take it oftener, stronger, and of coarser quality. In excess it interferes with the gastric juice, and prevents the proper digestion of fresh meat, the tannin hardening the soft fibres, lessening its nutritiveness, and seriously delaying the digestion. In making tea it should be known that soft water makes the tea go farther than hard. It has been noticed that five ounces of tea with soft water will make as good a beverage as nine ounces brewed in hard water.

The following are universally admitted to be flagrant mistakes:—

1. Making tea with water that has been boiled too long, or has been boiled

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several times, and is, therefore, hard and flat, to say the least of it.

2. Making it with water not well up to boiling point, whereas it should boil well for about five minutes. This prolonged boiling not only precipitates the lime, but also guarantees the destruction of any microbes. The water should be throbbing and throwing off steam in profusion and the kettle lid ought to be rattling.

3. Dosing it with carbonate of soda, which often spoils all flavour, and renders the beverage mawkish and soapy. If, however, the water be *very* hard, it may be advantageously softened by a very *little* soda, especially if cheap tea is being used, thus allowing more of the flavouring matter to be extracted. It also diminishes the astringency of the tea by neutralising and even preventing the solution of the tannin. Fine teas, however, are best with hard water without soda, although there is less colour.

4. Not drying and warming the teapot before putting in the leaves. The pot should not only be dry but thoroughly hot before making the tea.

5. Infusing the leaves or letting it draw for longer than three or four minutes if Ceylon, or six or eight minutes if Chinese. If the tea is not wanted immediately it is best to pour it into another warm teapot or other heated porcelain vessel after it has been duly infused, and it will then keep good long enough.

6. Putting fresh tea leaves in the pot before first throwing out the old ones and rinsing out and drying the teapot.

7. Boiling tea, as is so frequently done in large urns or cans, over gas stoves at refreshment bars and cocoa rooms. The heat not only drives off the fragrance and spoils the flavour, but of course extracts from the leaves the astringent and deleterious principle—the tannin.

8. Stewing tea. The term "stewing" is here used for want of a better, and in order to condemn a practice only too common among the working classes, of keeping the teapot standing by the fire for half an hour often, and sometimes all day, adding fresh water over and over again till no more colour or stomach-destroying tannin can be got out of the leaves. A practice more injurious to the health can hardly be imagined.

9. Using second brews and used tea leaves. "Knife and fork teas," or "Meat teas," are physiological horrors for most people, because tannin with albuminoids readily forms a very indigestible — almost leathery — mass. Strong tea and tough meat, and plenty of them, taken into the stomach are certain to produce dyspepsia before long in any but the most robust constitutions.

Cold Tea.—There is no more refreshing summer beverage than cold tea served with lemon. One pound of tea will make from five to fifteen gallons of beverage. What better advertisement for a grocer than to offer on a hot market-day ice cold tea made from his special half-crown brand? It would tend to increase the popularity of the shop and the sales of the tea, also of biscuits and fruit.

A very simple test for tannic acid will show the intelligent individual which of two samples of tea contains the less. Place an equal weight of the teas to be tested into two earthenware teapots, and pour into each an equal volume of boiling water; allow to stand for three minutes, and then pour out into two tall glass jars an equal small quantity of each liquor. To each jar add an equal volume of a solution of ferric chloride (chloride of iron), and dilute with equal quantities of water. The solution which gives the strongest greenish hue contains the largest quantity of tannic acid.

Perhaps the best way for a grocer to compare the qualities of two or more samples of tea offered to him at the same price is to weigh an exact portion of each, say the weight of a sixpence, adding precisely the same quantity of boiling water, and after allowing them to "brew" an equal length of time, pour out the liquors; then having ready a few small phials of new milk, begin dropping milk into the samples in rotation, watching carefully the effect of each drop. The poorest tea will be the first to turn a thin whitish *blue* colour, killed by the milk, as it were, while the best tea will assume a rich, syrupy, *brown* colour, killing the milk, so to speak. The utmost

precision is, of course, necessary in conducting this examination.

Tea is usually cheapest the latter three months of the year. The principal Auction Sales are held in the Commercial Sale Rooms, Mincing Lane, Monday to Thursday, each week.

The "creaming" or thickening of liquid tea is mainly owing to the presence of pectin, pectoses, etc., in the natural leaf. This mucilaginous substance is soluble in water when heated to 45° C. or upwards, and, of course, when the liquor cools it assumes a more or less gelatinous appearance, according to the proportion of pectoses present.

Special Wholesalers.—Jackson Bros. & Co., 14 St. Dunstan's Hill, London, E.C.; Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool; Spencer, Turner, & Boldero, Lisson Grove, London, N.W. (see *High Caste Ceylon* and *Silver Packet Teas*).

For tea bins, canisters, mills, mixers, funnels, moulds, scales, scoops, trays, sifters, and cutters, apply to Parnall and Sons, Limited, Narrow Wine Street, Bristol.

Tea-berry Tea or **Mountain Tea.**—The American winter green, *Gaultheria procumbens*, a kind of Erica, sometimes used to flavour tea, and as a substitute for tea. (See also *Canadian Tea.*)

Tea Dust or **Siftings.**—These used to be of very little importance in England, but during the last half-dozen years have become quite a leading article.

They consist of the siftings, fannings, small particles of broken tea leaf, stalk, dirt, and dust which result in curing, sorting, separating, mixing, and packing of the various qualities of teas. It is remarkable that, while the imports of Chinese teas have been rapidly falling away, the import of dust increases. This is partly due to the fact that tea refuse is now taxed in China the same as good tea, and, instead of being used by the poor in China, as previously, is now made the most of, and exported, with the result that London has, not unjustly, been dubbed the *tea-dust-bin of the world*. A large amount of tea-dust and rubbish also comes from India and Ceylon. About Christmas "the sweepings of the gardens" begin to arrive, although it may remain in bond uncleared for a long time afterwards as "tea in bond." As recently as December, 1900, we read in the market reports of Ceylon tea being sold at the London Commercial Sale-rooms at 2d. per lb.; green at 2½d. and 3d. What becomes of it? How do the Customs pass this 2d. rubbish? In reporting the matter, the *Daily Telegraph* says: "The samples had scarcely the appearance or taste of tea at all, and it is a question whether the stuff is tea." Under the present reading of the "Tea Act," which came into force in 1876, the Customs are powerless to prevent its importation, whatever may be its quality. It is embodied under the heading of Sale of Food and Drugs, 38 and 39 Vict., chap. 63, and paragraphs 30 and 31: ". . . . . unless the tea is absolutely bad, or of such a nature as to prove detrimental to life if consumed, or in any way adulterated, it cannot be stopped." An expert declared that all the juice, the essential feature of the tea sold for commerce, has gone out of this stuff.

Except at owners' risk, most of the carriers refuse to carry tea-dust unless covered with canvas, the charge for which is 1/- per chest, or 9d. per half chest.

Tea Houses.—A tea house in China and Japan is a house of entertainment where tea and other light refreshments are served, and are as common as "coffee-houses" in England.

Tea of Heaven or **Ama Tsja.**—A Japanese name for the dried leaves of *Hydrangea Thumbergii*.

Tea-seed Oil.—A fixed oil expressed in China from the seeds of the *Camellia sasanqua*, also known as *C. oleifera*, of the same family as the common tea shrub.

It resembles olive oil, and forms a considerable article of trade, being used for many domestic purposes, and is said to never turn rancid. It is used for illuminating purposes in the South of China, but it will not burn in cold climates. In the China trade, tea-seed oil is looked upon as the best vegetable oil for preserving wood, owing to its pos-

sessing great penetrating power on dry wood; and that if it is put on fairly thick on the under-water side of a ship's wooden deck exposed to the hot sun, it comes to the surface in a few hours, and materially adds to the hardness of the deck and to its life. The penetrating properties of tea-seed oil on wood are superior to the ordinary bright varnish or pine oil in common use for preserving wood in Europe, and, like cocoanut oil, it possesses the peculiar property of shrinkage.

The residual cake or refuse, after extraction of the oil, owing to the presence of a glucoside, is used as a hair-wash and as a soap, also as a fish poison and for destroying earth worms.

When new, tea-seed oil is inodorous, of a yellow straw colour, has no deposit, and is soluble in alcohol, but very little in ether, burns with a clear white flame, and does not freeze above 40° F. It is composed of 75 parts of eloine and 25 parts of stearine. Its elementary composition is of Carbon, 78.619; Hydrogen, 11.527; Oxygen, 9·854.

In addition to the above, there is also the essential and volatile oil distilled from ordinary tea leaves, and which gives the flavour to tea.

Tea Substitutes and Imitation Teas. — The following is a list of infusions, decoctions, or extracts used as tea in various parts of the world, although not often met with in England. Many of them are more particularly referred to under their respective names in other parts of the book :—

Abyssinian Tea.
Algerian Tea.
Ama Tea.
Apalachian Tea.
Arabian Tea.
Australian Tea.
Ayapana Tea.
Barbary Tea.
Bencoolen Tea.
Blue Moun. Tea.
Boer Tea.
Boschjesman's Tea.
Botany Bay Tea.
Bourbon Tea.
Brazilian Tea.
Brest Tea.
Broussa Tea.
Burr Tea.
Bush (Boer) Tea.
Cambric Tea.
Camomile Tea.
Camphor Tea.
Canadian Tea.
Canary Tea.
Cape Tea.
Cape Barran Tea.
Capitao da Matto.
Carolina Tea.
Colony Tea.
Cowslip Tea.
Chili Tea.
Coffee-leaf Tea.
Doorn Tea.
Duinen Tea.
English Breakfast Tea.
Exhausted Tea.
Fahan Tea.
Gongonha Tea.
Guarana Tea.
Honig Tea.
Hottentot Tea.
James' Tea.
Jersey Tea.
Jesuits' Tea.
Kaat, or
Kat Tea.
Kaffir Tea.
Kola Tea.
Labrador Tea.
Lemon-grass Tea.
Lie Tea.
Long-life Tea.
Macao Tea.
Malay Tea.
Marsh Tea.
Maté Tea.
Mexican Tea.
Mountain Tea.
New Jersey Tea.
New Zealand Tea.
Oswego Tea.
Pagle Tea.
Paraguay Tea.
Pectoral Tea.
Phaskomylia Tea.
Popayan Tea.
Sage Tea.
S. Barthlmw's Tea.
St. Germain Tea.
St. Helena Tea.
Santa Fé Tea.
Sassafras Tea.
Sloe Tea.
South Sea Tea.
Spanish Tea.
Stekel Tea.
Strawberry Tea.
Surinam Tea.
Sweet Tea.
Swiss Tea.
Tasmanian Tea.
Tea-berry Tea.
Tea Dust.
Tea of Heaven.
Tea Siftings.
Teamster Tea.
Theezan Tea.
Toolsie Tea.
Tun-Hoof.
Virginia Tea.
West Indian Tea.
White Tea.
Wild Tea.
Willow Tea.
Wood Tea.
Yapon Tea.
Yerba de Maté

In Spain there are two acknowledged factories for artificial tea, started about 1896, and what is more remarkable is that they possess a patent or privilege for the invention. The adulteration consists in mixing the roasted marc or refuse from the beetroot sugar factories with used tea leaves.

The particular flavour of the tea is given by adding an essence specially made for that purpose, and the green colour is given with sulphate of copper, which is, of course, very noxious to the health.

Tears (pr. *teers*).—A commercial term for solid, transparent, tear-shaped drops, or drop-like portions of substances, like amber, resins, balsams, gums, and other exudations of trees. Instead of saying they are in small pieces, they are called "tears."

Teasel Seed (often spelt *Teazle*).—Small, flat, oblong seeds, about same

size and shape as Inga seed, but of brown colour. The grains are not much unlike caraways, but lighter in colour, and straight, not curved. They are obtained from a plant of the genus *Dipsacus*, one kind of which bears a large bur, which is used as a nap on woollen cloth.

Teel or Til Oil.—(See *Gingelly* or *Sesame Oil.*)

Teff.—A product of *Poa abyssinica*, and takes first place as an article of diet in Abyssinia. The grains of this herbaceous plant are as small as a pin's head, but its meal forms the bread in general use. A much inferior black bread used by the poor is made from "Tocusso," a kind of millet (*Eleusine tocusso*). The roasted seed of the flax plant is sometimes eaten.

Tellurine.—A kind of French tripoli, for polishing metal, cleaning marble, etc.

Temperance Drinks.—(See also *Unfermented Wines*, *Piquette*, *Non-alcoholic Beers*, *Aerated Beverages*, etc.)—Drunkenness is doubtless a great curse, but whether it is the greatest is not so clear. We know what the world is with it, but no one can say what the world would be without it. Dean Farrar, in a recent speech, said that Biblical history had shown that the nations who had abstained from strong drink were the most remarkable for their energies. The Jewish people are the only civilised people who have survived throughout thousands of years; yet the frequent denunciations of the use of strong drink throughout the Old Testament do not lead to the conclusion that they were a nation which abstained from strong drink. There are to-day two peoples who are strict teetotallers—the Turks and the Chinese. They are both distinguished for their want of energy. There are two nations which may be described as the most energetic and progressive on earth—the English and the German nations. Both are known as somewhat conspicuous consumers of strong drinks. The Scotch are a particularly energetic people, yet a Dundee paper declared the other day that they were the most drunken people on the face of the globe. Facts are ugly things, but they should be faced fairly, and, while including in this Manual details regarding intoxicants, it may interest many readers to see some account of Temperance Drinks. Whatever odium may attach to rabid teetotalism, few object to *temperance*.

It may be useful to note that one of the most efficient ways to allay thirst is to rinse the mouth well with not more than a tablespoonful of water; this will quench the thirst as effectually as a quart of liquid hastily swallowed, and will not have any injurious effects. Several excellent preparations have also been advocated by the Church of England Temperance Society.

Apple Champagne.—Boil from 1lb. to 2lbs. of apples in water until they are dissolved, or rather until they form a soup with the water; add boiling water to make up a gallon, and from ½lb. to ¾lb. of sugar; when nearly cool add a little yeast, and when the fermentation is well advanced strain and bottle, tying the corks tightly down. It will be ready for use in two days, and will remain in its best condition about a week.

Stokos.—Take from four to six ounces of oatmeal, as fine as flour, and four to six ounces of sugar (lump or granulated), put both into an open pan with two to three tablespoonfuls of Lime-Fruit Juice, or a fresh lemon cut in thin slices and the pips taken out, and add a half teaspoonful of ground ginger, mix to the consistency of cream with boiling water, stirring briskly to avoid lumps; let it stand for ten minutes, then add a gallon of cold water. The Stokos is then ready for use. It costs 3d. per gallon. If preferred, the quantities (except the ginger) may be increased.

Cokos.—Take 4 ozs. of fine oatmeal, 4 ozs. of sugar, and 2 ozs. of cocoa essence or concentrated cocoa, put into an open pan, stir all the ingredients before wetting, so that they are well blended; mix with boiling water to the consistency of cream; let it stand ten minutes, then add one gallon of cold water. It is then ready for use. Costs 4d. per gallon.

Both these drinks can be strained and bottled when cold.

Hopkos is a good harvest drink. Boil ½ oz. of hops, ¼ oz. of horehound, and ½ oz. of ginger (bruised) in 1½ gallons of water for 25 minutes; add 1lb. of best brown sugar, and boil ten minutes more; then strain, and bottle or put into a cask while hot; it will be ready for drinking when cold; it should be kept in a cold place. Costs 3d. a gallon.

Lime-fruit Syrup.—A very pleasant and cooling drink is made of citric acid, 3 ozs.; sugar, 7lbs.; and boiling water, 1 gallon. A little colouring is added. Unfortunately, most of these syrupy beverages put up by manufacturers mainly consist of glucose and water, with traces of sulphuric acid.

Barlikos.—A new speciality, prepared by Keen, Robinson, & Co., Limited, London, the mustard makers. It is put up in 6d. and 1/- packets, and consists of very fine barley-meal, flavoured with real lemon, and well acidulated. It is remarkably nice and refreshing, and appears to sell well all the year round.

Lemonade for Present Use.—Put 1lb. of white sugar, 1 oz. cream of tartar, and two lemons cut in slices in a large jug, and pour over all three quarts of boiling water. A teaspoonful of essence of lemon may be used instead of lemons. This is a very cooling drink, and costs about 2d. a quart.

For Bottling.—Dissolve 2lbs. of lump sugar in a quart of boiling water and 2 ozs. of citric acid and two lemons sliced (or a teaspoonful of essence of lemon); stir together, strain, and bottle when cold. A tablespoonful in a glass of water will make a pleasant drink. Costs about 1/3 a quart, which will make 5 or 6 quarts of drink. Note.—One lemon is about equal to ten drops of essence of lemon, or to half a drachm of citric acid. If essence of lemon is used in place of lemon, it should be mixed in when it is lukewarm.

Lemon Squash.—Put the juice of a lemon and one and a half teaspoonfuls of powdered sugar into a soda water glass, add chipped ice, and fill up with soda water, stirring well with spoon. Serve either with or without straws. Another way is to use the bottled lemon juice instead of the fruit, adding soda water and sugar to taste. (See p. 532.)

Lemonade Made with Citric Acid.—Take 4lbs. of powdered sugar, 1 oz. of citric acid, and 2 drs. of essence of lemon. Mix thoroughly, and keep securely corked. When required for use, mix two or three teaspoonfuls of it in a tumbler of water.

Coco.—A popular Paris drink. (See page 255.)

Urbose is a registered name of a sort of botanic beer.

Cold Tea.—Make tea in the morning. Put the liquor, but *not the leaves*, into a stone bottle, and when cold add a few slices of lemon, no milk or sugar; 1lb. of tea is enough for 18 gallons of water. Very refreshing on hot days, and has no pernicious results.

Ice-water and ice-creams, although very popular, are not to be recommended. Their excessive and general use has often been condemned by the medical profession.

Vendors of so-called Aerated Beverages, Botanic Beers, British Wines, etc., should remember that most of these, if not sold quickly, are liable to generate a considerable amount of spirit from the fermentation of the sugar and other ingredients. The Inland Revenue authorities seem to allow up to about 2 per cent. of alcohol, but in many cases 4, 6, and even 10 per cent. of proof spirit have been found, and the retailers heavily fined. To stop this continued fermentation most manufacturers mix a little salicylic acid in the beverages, and it is a custom with many to exchange any bottles which have not sold quickly, and send them to publicans who, of course, have proper licences.

Bottlers should beware of filling bottles or siphons bearing other makers' names, it being an offence heavily finable.

Medicated wines, such as those of Quinine, Coca, etc., are largely sold to people who are considered, and consider themselves, total abstainers, but they usually contain a large amount of alcohol.

Teneriffe Wine.—A very similar product to Madeira, but much lower priced, and considered somewhat in-

ferior. Teneriffe is the largest island of the Canary group, has a delightful climate well adapted to rich, juicy fruits, and produces a large quantity of wine.

Tent Wine, or Rota Tinto.—A sweet and coloured Andalusian wine, highly esteemed in Spain. It has a low percentage of alcohol, but will not keep long, and is popular in England as a Sacramental wine. Another red wine, called *Rota*, is made at Stellenbosch, in Cape Colony.

Terebene.—A sort of refined turpentine, or colourless mobile liquid hydrocarbon, having very slight odour, and is also optically inactive. It is obtained by treating oil of turpentine with concentrated sulphuric acid in the cold, and then distilling the product.

A common cheap kind of terebene is used as a disinfectant, but the pure, colourless quality is often used for the relief of winter cough, and for various other medical purposes. (For *Terebene Soap*, see *Turpentine Soap*.)

Tequila.—See *Mescal*.

Terra Alba.—In the colour trade this is a name for *finely* ground gypsum. (See also *Plaster of Paris*.)

Terra-Japonica. — A kind of Japanese earth, like ochre or sienna.

It used to be considered identical with Gambier, and the two are still often miscalled, although quite different products. (See also "Cutch.")

Terrapin.—A species of fresh-water or tide-water turtle, or tortoise, very popular as a food in North America, especially in Philadelphia and Baltimore. It is also imported into this country. The "diamond-backed" species, *Malaclemmys palustris*, of the Atlantic coast, is preferred. It owes its common name to the lozenge-shaped figures on its back. During the existence of slavery it was so numerous that on the bill of sale of a slave it was usually stipulated that he was not to receive terrapin more than twice a week. Now it is considered a great delicacy, and brings very high prices, and only the rich can indulge in the luxury.

Those under five or six inches long are called *cullings*, of which it takes eighteen to twenty-four to make a commercial "dozen." Those of six inches or more are *counts*, or *counters*, of twelve to the dozen. The females, or *cows*, are the largest and most esteemed on account of the eggs they contain. The males, or *bulls*, being also tougher, are of less market value.

At Crisfield, on the eastern shore of Maryland, terrapins are now canned, each can containing one Chesapeake diamond-back terrapin, and the soup, also offered for sale, is the excess from filling the cans.

Terrines.—The French name for the small earthenware fancy pots, or jars with loose lids, in which game pastes, *Pates de Foie gras*, etc., are sold in the shops.

Tfol. — An argillaceous earth which contains free gelatinous silica, and is largely used in Northern Africa by the Arabs as a substitute for soap in washing linen.

"The Four Beggars."—This name, or its French equivalent, "*Les quatre mendiants*," is often applied to the four common dessert fruits:—Raisins, figs, almonds, and nuts. Various historians have traced it back to one Father André, a noted preacher of the 16th century, who thus explained it to Louis XIII. in one of his sermons. These Lenten fruit are called "four beggars" because each has for patron saint one of the four begging orders. The hooded Franciscans represent the *dried grapes*, the Recollets are dried *figs*, the Minimes seem to be wrinkled *almonds*, and the Moines (barefooted nuns) empty *nuts*, the dresses, hoods, or cloaks worn by these several religious orders corresponding with the colours of the four fruits named.

"The Four Thieves' Vinegar."—See p. 56.

The, Creme de. — (See also *Liqueurs*.)—Crême de Thé is a Continental liqueur distilled in spirit from tea leaves and stalks.

Theezan Tea.—Obtained in China from the plant *Rhamnus Theezans*, natural order Rhamnaceæ.

Theine—A white, bitter, crystallisable substance obtainable from tea, and has the composition of an alkaloid. It is the all-important chemical constituent of tea wherever grown. Taken alone, in large doses, it is poisonous. This peculiar refreshing principle appears to be almost identical both with the *caffeine* of coffee and the *theobromine* of cocoa. Similar alkaloids are also present in kola, guarana, maté, yapon, and holly leaves, and although found in these dissimilar plants, the properties are analogous in each case.

On account of the refreshing and restorative properties due to these isomeric alkaloids, all the plants, in various parts of the world, that elaborate them are used for making beverages, and it is a remarkable fact that the lowest-priced teas, if genuine, contain very nearly as much theine as the most costly. Much seems to depend on the age of the leaf. Young leaves may contain 4·10 per cent., but full-grown less than 2·50 per cent. Theine was first identified by Oudry in 1827. Berzelius and others have suggested that theine and caffeine are really the same thing, but this is not so certain, for theine appears to be a more powerful drug; it also counteracts the alcohol and morphia habits, and is capable of producing contractions of the voluntary muscles, while caffeine does not. On the other hand, caffeine is undoubtedly an antidote for nicotine (tobacco poison), but theine is not. Hence coffee is relished by smokers, while tea is avoided.

Theine has the formula $C_8H_{10}N_4O_2$, consisting of carbon and the gases nitrogen, hydrogen, and oxygen in chemical combination. As already stated, it is, in the pure state, a white body, crystallising in needle-shaped crystals; it has no smell, but possesses a slightly bitter taste; it dissolves freely in hot water. It may be regarded as a powerful stimulant to the circulatory and nervous systems, and is, therefore, regarded as the stimulating constituent of tea.

Tea drinkers should, therefore, endeavour to obtain the maximum amount of theine with the minimum of the deleterious matter known as *tannin*. Unfortunately, they do the opposite, and, as a rule, look for the "strength," "body," and *colour* of the tannin. This is quite a mistake, for theine in solution is colourless.

How Theine may be Extracted.—"Exhaust the tea with boiling water, boil the decoction with either litharge or acetate of lead, and concentrate the filtered solution till the alkaloid crystallises out on cooling. The product can be purified by resublimation, or by crystallisation from hot water.

All tea rejected by the Customs as unfit for consumption is now readily purchased in London for the manufacture of theine by four firms. The tea is ground with lime and asafœtida, and delivered from Customs supervision. Most of this refuse is exported to the Continent, where the theine is extracted by means of fusel oil. Various drugs are then prepared from it, and re-imported to England. The sweepings of the tea warehouses and inferior teas are also used in this trade.

The denatured leaves remaining after the manufacture or extraction of theine, caffeine, citrate of caffeine, etc., are said to be often mixed with other tea leaves, and palmed off on grocers as genuine tea. The French chemical traders are now entering into this branch of industry. It is very difficult to determine the exact percentage of theine present in a given quantity of tea, but Indian growths are credited with the most; then rank Ceylon, Java, and Chinese, the latter often containing only from 1 to 3 per cent., while Indian growths have been declared to contain as much as 4, 5, and 6 per cent, irrespective of price; but much seems to depend on how much exposure the teas have undergone. The best method of estimating the amount is that of Claus: The powdered leaves are dried, and then extracted with ether. Next dissolve off the solvent and extract the residue with sulphuric acid. This acid liquor is then to be filtered, mixed with an excess of ignited magnesia, and evaporated to dryness at 100°. Finally the residue is pulverised and extracted with boiling ether. Till quite lately theine could not be profitably manufactured in England, owing to the prohibitive duty, which was not removed from

damaged tea; but the Customs have at length admitted "denatured" tea (*i.e.*, tea treated with lime and asafœtida) duty free; the consequence being that England has now become the chief seat of theine manufacture, and the price is about 2/- an ounce.

Theobroma Cacao.—So-called from the Greek words *theos* (a god) and *broma* (food). "Cacao" is from the Mexican word *cacauall*. The food was evidently presumed to be fit for a god's repast. Although it is now in English called "*Cocoa*," this latter word originally indicated the milky nut of the Coker palm (*Cocos nucifera*).

Theobromine.—A white powder representing the characteristic alkaloid of cocoa. It is closely associated with the *theine* of tea and the *caffeine* of coffee, though not strictly identical with them. It has for its formula $C_7H_8N_4O_2$; while theine and caffeine are represented by $C_8H_{10}N_4O_2$. Theobromine seems to be a lower homologue of the latter. Its physiological action is similar to, but more powerful than, theine. It has also been found to be a more gentle nerve stimulant and waste of tissue preventer. (See *Epps's Cocoa*.)

Thieves' Vinegar.—See p. 56.

Thrum Mops.—These useful articles for washing and cleaning ship decks, floors, steps, etc., are generally made of strips of coarse cloth or yarn, called "thrums," fastened at one end of a long handle, and thus forming a kind of round, soft sweeping broom.

Thumb Blue.—A name for small, obtuse, triangular knobs of indigo blue, used in laundries to give a slight tinge of blue to linen. Each of these hard and dark blue knobs is indented on each of its three sides, as if pressed by the thumb during manufacture, and hence the name. Seldom inquired for latterly.

Thus.—See *Frankincense*.

Thyme.—F. *Thym*; W. *Teim*.

A dwarf herb of the mint family. One kind, *Thymus vulgaris*, grows wild in Britain as a bushy undershrub from six to ten inches high, with very small ovate and opposite leaves, which have a grateful, strong, and penetrating odour; but the kind cultivated in gardens is a native of the South of Europe. It bears flowers either white or red, with two-lipped calyx and corolla. It loves rich sandy soil in the sun, and is more delicate in perfume than the other. The tops and leaves should be gathered for drying at end of July or in August. Thyme is used, both green and dried, as a warm, pungent, aromatic seasoning for soups, stews, stuffings, sauces, and other culinary preparations; also in perfumery and pharmacy.

Lemon Thyme, a hardy trailing evergreen, which has a very agreeable scent, is also largely cultivated. There are several kinds of *Wild Thyme*, *Creeping Thyme* or *Mother of Thyme*, *Horse Thyme*, *Basil Thyme*, etc., but these are not much used. Thyme was formerly burnt as incense by the Greeks. It was also used in cooking by the Romans, and in preparing their aromatic liqueurs, being supposed to revive the spirits and give courage.

Thyme Oil, or Essence. — F. *Thymol*.

This is a volatile essential oil, and is distilled mostly in the South of France from all parts of the garden thyme plant (*Thymus vulgaris*), but also comes into this country from Hamburg and from the United States. It is much used in veterinary liniments and perfumery. There are two kinds—namely, oil of *white* thyme and oil of *red* thyme. The former is a colourless liquid possessing a finer and more penetrating aroma than does the red thyme oil—which latter has a reddish-yellow colour, and is largely used as a perfume for soap.

In Spain, thyme oil is usually infused in the pickle in which olives are preserved; it is also often made to pass for oil of origanum or oil of marjoram. Used in scenting Windsor soap, also in flavouring foods, confectionery, and medicines.

Oil of Thyme or "*Thymol*" is also now largely prepared from Ajowan fruits, which are exported from Calcutta to Leipzig.

Tick Beans.—Small horse-beans.

Tiger Nuts.—See *Chufa Nuts.*

Tile Seed.—See p. 412, also *Sesame*, etc.

Tile Tea.— See *Brick Tea*, p. 142.

Tincal.—Rough or unrefined *Borax.* (See p. 125.)

Tincture of Rhubarb. — See "*Rhubarb Tincture.*"

Tinder.—An inflammable substance made of charred lint or rags, etc. German tinder is the soft amadou.

Tinfoil. — This is a thin metal leaf, similar to gold leaf, but properly consisting of pure tin, beaten or rolled out to a greater or lesser degree of fineness, and used as a lining or covering in packing dry powders, butter scotch, sausages, cream cheese, foies gras, fancy soaps, tobaccos, etc., so as to preserve them from damp, light, or atmospheric changes, or for beautifying by its brightness the appearance; and covering the corks and necks of bottles of champagne, British wines, bottled fruits, etc. It is also often used instead of silver for "silvering" cheap looking-glasses.

Ordinary qualities of tinfoil, however, rarely consist of pure tin, but are generally alloyed with from 1 to 20 per cent. of lead, and the thicker grades often contain as much as 50 per cent. This adulteration may usually be detected by rubbing a piece of the foil on a sheet of clean white paper, when the lead will leave a decided (or red) mark. All qualities when held up to the light should be seen to be free from *holes*, if intended for the protection of delicate goods from air and moisture.

In using tinfoil for wrapping articles of diet, especially moist articles such as cheese, it is highly important to see that the tinfoil is *pure*, the lactic acid in cheese being particularly liable to absorb lead.

Plain tin-coloured foil is rolled out 20 to 90 square feet to the pound, and prices vary from 7d. to 1/3 per lb., the purest and thinnest being of course the dearest.

Foil is also made in gold and silver colours, and some kinds are embossed—the best gold quality running as high as 5/- and 6/- per lb., silver 2/- to 3/-.

Tinned Fruits.—See p. 178.

Tinned Meats.—(See also pp. 63, 86, 178, 550, and *Preserved Provisions, Rabbits, Salmon, Sardines*, etc.)—The immense industry which has sprung up during these last thirty years in the preservation of foods by first destroying the putrefactive germs by heat, and then hermetically sealing the foods in tins, is very remarkable.

No serious or successful attempts to preserve the various food products of the earth were made until the present century, and it was left to Liebig to demonstrate the real nature of the processes of decomposition which were then but imperfectly understood. He showed that food had only to be heated to the boiling point to assure its keeping qualities. This knowledge was not forgotten by Wortheimer who, in 1839, patented a process which has since become extensively practised.

His method was to place the food to be preserved in tins which were filled up with water or fluid, and then, the lid being securely soldered down, and provision made for the expulsion of air by perforating the lid, the meat, etc., was cooked and the holes sealed up again. Food preserved in this manner will last almost indefinitely. This treatment seems to us so very elementary that we are astonished to think it was not resorted to earlier. But it was a common mistake, before the germ theory of decomposition had been formulated and received general credence, to regard the oxygen of the air as the chief putrefactive agent, so that the practice of boiling food, etc., and then exposing it, to allow of the escape of air, was believed to be a sufficient precaution to ensure preservation. Every housekeeper knows by experience that this is a fallacy, and the destructive microbe's activity is now

TINNED MEATS—(continued).

guarded against by providing suitable coverings to repel his insidious attacks.

The great impetus to the trade in tinned goods was, no doubt, given by the enterprise started in preserved meats many years ago, when the Australian companies, in urgent need of strong, serviceable, and attractive packages for their newly discovered food, hit upon the expedient of having circular tins made specially for it, so that they might secure a light, portable package, which would be also air-tight and best adapted for the preservation of the meat on a long voyage. If packed in large heaps the soddened meat would be more likely to "turn," as cooks say, than not; but by being separated into trifling portions, such as would be enough for one day's consumption in an ordinary family, it could be depended on to keep sound and wholesome for months at a stretch. The difficulty of packing and preserving perishable commodities being thus satisfactorily overcome, the experiment was soon tried in other departments of trade, here as well as in the colonies and abroad. America entered the field of speculative traders, and soon succeeded beyond her utmost expectations in popularising tinned meats, fruits, lobsters, and salmon. Canada followed with her tinned meats and fish, Switzerland and Holland with their condensed milk, and other Continental countries (chiefly France) with their sardines, etc.

Most of the tinned meats come from America and Australasia, where, as the saying is, "*they eat what they can, and can what they can't.*" There have been many important inventions in canning, and in this line Americans have effectually taken the lead, reducing the cost of the work, assuring less danger to consumers, reducing cost of transportation, and increasing the number of articles made available for canning,

The Libby firm now puts up *eighty*, and the Armours *seventy-three*, specialities, and both are adding one new one to their list almost every week. Among these we find stewed kidneys, Irish stew, beef and vegetables, beefsteak and onions, turkey and tongues, cottage-head cheese, jellied hocks, sauerkraut and sausage, Hamburger steak with onions, chopped dried beef, chicken loaf, luncheon loaf, veal loaf, beef loaf, ham loaf, cottage loaf, Vienna and Frankfurter sausages, pigs' feet, and many other delicacies and popular home-made dishes.

The introduction of the half-pound tins of salmon; the tins of concentrated soup in more than twenty varieties; condensed "pie-timber" in small packages; potted and deviled meats; sliced bacon in tin cans and glass jars, and a wonderful variety of table specialities have been hailed with delight at home and abroad.

All of these preparations are comparatively new, and many of recent introduction.

Tons of meat are daily preserved in the large packing houses of Chicago and other centres, and it is encouraging and satisfactory to learn from Dr. Green, one of the judges at the Columbian Exposition, that the meat so cooked and prepared could not be excelled in the best households. Everything is handled by machinery. The ox, after being dressed, is hung for forty-eight hours in the ice room, and the meat is cooked by steam in large cedar vats. The handling and dissection of the meat is entrusted to skilled assistants, and the most scrupulous cleanliness obtained throughout. As to the source from which the meat is obtained, the same eminent authority informs us that only the primest cattle are slaughtered. See *Beef* (*Tinned*).

Great Britain has long held first place for quality in beef and mutton, for in no other country is it practicable to obtain these meats so tender, juicy, and well developed; but it must be acknowledged that this standard is being gradually lowered by the struggle for rapid feeding of animals.

The use of oil-cake produces size, weight, and fatness, but the meat is sadly deficient in the characteristic flavour afforded by matured and wholesome flesh of fully-developed cattle.

The business done in tinned meat is enormous.

TINNED MEATS—(continued).

Australia's tinned products rank next to those of the States, and they have achieved a considerable reputation in the world's markets. Her chief item has hitherto been corned beef, but now our go-ahead colony is treating her surplus mutton in the same way, and there is a growing demand for the article. Canada, Belgium, France, the Argentine Republic, Uruguay, and Japan, are all purveyors of tinned products. So that we receive from all quarters of the globe an interesting variety of food stuffs imperishably preserved for us.

England's tinned exports to the late Chicago Exposition included a varied and representative assortment of preserves, among which we find the following selections recorded. Irish stew, lamb with green peas, roast mutton, mutton chops, ham, tripe and onions, Oxford sausages, truffled sausages, chicken sausages, and Scotch "haggis." It is significant to note that jams, for which we have very considerable repute, and biscuits are not included in the list. Germany was represented by a display which comprised ham with chestnuts, and goose with beans, (the latter combination being specially designed for American palates) "*pâté de foie gras*"; ham, Burgundy style; ham, with champagne sauce; fricandeau of veal, with purée of green peas; and, of course, sausages.

The Board of Trade records show that in the United Kingdom we now consume yearly about 30 million lbs. of tinned salmon, 7 of lobsters, 18 of sardines, 66 of meats (including tongues), and 60 of milk; or a total of about 70,000 tons of imported tinned food not counting tinned fruits and vegetables, nor the tinned meats made up in this country.

The bulk of this large trade passes through the hands of grocers. None of the articles can possibly equal fresh food, unless it be sardines, but many are of excellent quality, very convenient, and undoubtedly of great benefit in cheapening fresh meats. The foolish prejudice which once existed against them has now nearly passed away, or is confined to the remoter agricultural districts, where landowners, farmers, and others are naturally jealous of all foreign importations.

Unfortunately the heat required to preserve the meat—especially beef and mutton—is so great that it becomes overcooked, the fibres become loosened, the flavour somewhat impaired, and the food is not quite so easily masticated.

The meat is usually packed in the tins while raw, and is then sealed and cooked in an outer vessel containing boiling water. When cooked sufficiently, the tin is pierced, and at the very instant the air and steam have been expelled it is resoldered.

There are differences of opinion among packers as to the advisability of venting. The French preserve their organic foods without venting at all, relving on the steam-heat to exterminate the germs. In America some packers vent once, others twice, and some three times, before sending out their products from the factory. Each vent-hole has, of course, to be soldered up again, and hence the marks frequently noticed on tinned goods, and which give rise to occasional doubts as to the quality of the contents. It must, however, be admitted these fears are not always ill-founded, for cases have occasionally come to light where it has been proved that "blown" tins (tins puffed out by interior fermentation and putrefaction of the imperfectly preserved contents or other causes) have been pricked and, when the gases have escaped, resoldered up, and afterwards sold for consumption in the ordinary way. Anyone disregarding its bad smell and putrid condition and partaking of such unwholesome food will probably be taken ill, and may suffer fatal consequences.

Medical men agree that most of the serious cases which arise from the use of tinned meats are really the results of similar decomposition, or that the air which, when the meat is first tinned, is supposed to be excluded by hermetically sealing is not always got rid of, but that some remains, although in an attenuated form, and that in process of time decomposition sets in.

It must be admitted that fatal results are extremely rare, compared with the millions of tins imported; still, a large

TINNED MEATS—(continued).

number of cases of slight sickness or illness ascribed to tinned foods do not come into records, but they are more or less known to many families and medical men.

The dangers may arise from an inherent change in the food itself, and there is no doubt that the longer the food is preserved the greater is the chance of its being unwholesome, while, as is well known, as soon as the food thus preserved is exposed to the air, certain changes rapidly set in, and for this reason tinned goods should be consumed soon as possible after being opened.

Then, again, the cans themselves are usually made of *tin-plate*, that is, sheet iron superficially alloyed with tin, and the best solder employed consists of equal parts of block tin and *lead*, but a baser description of solder, composed of a larger proportion of lead, is not uncommon. A flux of powdered resin, or a much more deleterious flux composed of chloride of zinc, containing free muriatic acid, is also applied to the tin surface to be soldered—often on the inside, which is more dangerous owing to the direct action on the lead of the acid, and also owing to galvanic action.

In France it is not permitted to use any other white metal for canning than that which is plated with pure tin. All solderings made in the interior of the can must be likewise made of pure tin, the use of lead being strictly prohibited.

In cases of poisoning, the symptoms may vary from simple nausea or diarrhœa to vomiting and prostration and collapse. Tinned shell-fish, such as lobster, is more liable to cause serious symptoms than tinned fish, such as salmon and tinned meats less frequently give rise to untoward symptoms, except meat into which the composition of pork enters. One reason why tinned foods sometimes cause trouble when eaten, especially if they have been kept open a few hours during the hot weather before consumption, is that so much of such foods in the cheaper markets are derived from old ship's stores. A ship upon sailing lays in a certain store of tinned foods; it often happens that these are not touched on the voyage, and they may go another voyage or not, but ultimately they are sold as old stores. The tins are then cleansed, re-coloured, re-varnished, and re-labelled with clean fresh labels and re-sold. So, again and again quantities of tinned goods may be re-sold year after year, and some of these come upon the general market and are sold in seaport and inland towns. Considerable quantities must find their way into the markets and be retailed by small grocers in the poorer neighbourhoods. In addition to the liability of causing sickness, stale tinned foods cannot be very beneficial as nutriment; in fact, in the course of years, much of the proper dietetic effect must be lost.

All tinned foods which are distinctly bulged, "blown," or puffed up, and will not remain in position when pressed back, but rebound, are, of course, bad, and should be thrown away; the bulging being due to the presence of living anærobic bacteria, which produce gas.

Unfortunately, hucksters and others often go to wholesale dealers and buy "blown" tins at a very cheap rate, then doctor them up, and sell them as good. For firms calling themselves respectable to dispose of blown tins to parties making this use of them is most reprehensible. There should be no offensive smell when a tin is opened, and the contents should be emptied from the tin on to a dish as soon as possible. On no account should vinegar be poured on the meat while in the tin. The jelly clinging to the meat and tins is of great value, and should, as a matter of economy, be carefully served with the meat.

The age of tinned goods may be often indicated by the rusty spots on the tins and labels, especially if they have not been varnished, but it is to be hoped that the date of canning will soon have to be stamped on each tin; also the name and address of the canner. Both meats and fruits should always be stored in a cool place, not near the fire, nor in a shop window under the blazing sun. Fruits especially being liable to alcoholic fermentation. (See *Canned Fruits*.)

During the summer months canned goods are in great request. Most people

then prefer cold meat, and cooking is reduced to the smallest limits.

Picnics, excursions, open-air luncheons, seaside lodgings all favour the sale of these delicacies, and the occasions of "opening the tin" also offer a good opportunity for selling a tin opener, which may easily leave more profit than the tin itself.

For tinned meats and fruits, apply to Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool (also proprietors of the "Southdown" brand of mutton and "Shorthorn" brand of beef).

"BIVOUAC" TINS, containing two or five rations of superior meats, evidently prepared and seasoned by well-experienced cooks, are one of the specialities of Prevet & Co. (late Chollet & Co.), of Julienne fame, and now enjoy a large sale. They are intended for naval and military officers, explorers, sportsmen, cyclists, tourists, and others, who may often require an outdoor repast.

By an ingenious, yet very simple, arrangement each tin has underneath it a small projection, or reservoir, ready charged with patent fuel and wick.

This, on being lighted, acts as a miniature stove, and in less than ten minutes anyone may have, whether on the mountain-side or in an open boat, a piping hot dish of excellent *Stewed Mutton*, "*Bœuf à la mode*," *Roast Beef and Vegetables*, *Jugged Hare*, *Jugged Venison*, *Duck with Turnips*, *Duck with Green Peas*, *Pigeon with Green Peas*, *Stewed Veal*, or *Stewed Fowl*.

The five-ration size consists only of beef, with carrots, potatoes, onions, and gravy, and is known as the "Naval and Military" size.

Far from being intricate or unwieldy, the whole contrivance is wonderfully compact, and does not add above an ounce to the weight, nor over a cubic inch to the bulk, of the tinned food itself.

As for the contents of these "Bivouac" tins, they are both rich and well-flavoured, surpassing anything we know of in the same line.

Tinned Hams

America.—Medium-sized hams of about 12 to 14 lbs. are taken and cured in mild, sweet pickle of 75° for 30 days, or until sufficiently cured. During this time they should be overhauled and repacked in new pickle of the same strength. When well cured throughout, the hams are boned, and the skin neatly lifted as far back as the knuckle, leaving it attached. The exposed fat is then trimmed from the ham, leaving but a slight covering of fat over the meat. The skin is now drawn back over the ham in its original position, and the ham wrapped with strong twine, binding it firmly, making the shape of ham as round as possible.

To shrink or cook the hams before putting them in cans, they should be placed in the heated water in the kettle and allowed to remain there for 1½ hours, keeping the water at 180° F. They are then removed from the cooking bath, and, while still hot, placed in the cans. The latter are then filled with jelly, made by boiling up beef bones.

The cans are now sealed, while still hot, and placed in the retort, which is closed tight. They are processed for 1½ hours at 5lbs. pressure. When this time has elapsed, the cans are withdrawn from the retort and the vents opened with a fine awl, making sure that the vent is fully open. They are immediately closed when all the pressure is off, and again returned to the retort and given a further heating for 1¾ hours at 9lbs. pressure. The cans are withdrawn after this period, the vents once more opened and quickly soldered up again. The cans are removed to the shower room and showered until cool.

It should never be attempted to boil the hams again after processing, as they would be then too much cooked and made into inferior goods. Great care should be exercised in putting up these goods, as this meat is very fine grained, and in a large compact piece. It is difficult to reach the centre of the ham in order to thoroughly extract all air and obtain a perfect vacuum. Unless this is accomplished all labour will have been in vain, besides the added loss of the goods themselves. It is absolutely essential to handle these goods quickly, keeping the hams hot until ready for processing.

In a can weighing 15½lbs. gross weight, about 3 to 3½ lbs. of jelly is required. This jelly can be made from gelatine if necessary, using 2lbs. water to each pound of gelatine. The jelly should always be heated in a jacketed kettle, and made of a consistency to become solid when cold.

In many countries, amo[illegible]em France, Germany, and Norway, these goods are sold by gross weight, bringing in the neighbourhood 1/3 or more per pound. There is always an open market and a good demand for these canned hams.

The cans for hams should be carefully made of good material, 2X tin being used. Every can should have wedges soldered in it to keep it from collapsing when cooled off in showering, as, owing to the irregular shape of the hams, there is considerable waste space, the jelly not offering sufficient resistance to keep the cans from collapsing without the extra strengthening.

The sizes of the can should be, for the largest size, 6½in. in diameter by 13in., and the smallest cans proportionate to the size of the hams. They are made 6in. high by 12in., 5½in. high by 11in., and 5½in. high by 10in.

The top of the can is soldered on after the ham is placed in it, before the jelly is put in, as the latter, if put in first, would interfere seriously with the soldering. When the cans are made, a cap-hole is made in the top an inch in diameter, through which the jelly may be poured after the top is soldered on. Care should be taken to see that the jelly fills up all the space in the can not occupied by the ham. Should this fit the can very snugly, and the can apparently need no jelly for filling, a small steel or iron rod should be pushed through the ham from the cap-hole to the bottom of the can, thus enabling the jelly to find a channel to fill any possible empty space in the can.—The *National Provisioner*, New York.

Tinned Mutton.—See *Australian Mutton.*

Tintara — (See also *Australian Wines.*)—An Australian wine, red and clear, with no particular flavour, bu generally somewhat brandied. Th vines from which it is produced are hal Mataro, with Grenaches, and others Tintara is said to be highly ferruginous and useful for invalids.

Tinted Sugars.—See *Confectioners Sugar.*

Tinto.—A red Madeira wine, lack ing the high aroma of the white sorts but, when old, resembling tawny port.

Tirhoot Chutney—(See also *Chu neys.*)—A favourite Indian condiment and considered by many to be the bes of all chutneys. The fruits are cut int slices, sweetened, and made very hot.

Tissue Paper Shavings.—(Als *Confectioners' Lining Paper, Wa Paper*, etc.)

Apply to A. Norsworthy & Co., Not tingham. (See adv.)

Titler or Sugar Loaf.—A techn cal name for the large truncated cones c refined sugar which have been shaped i a pot and baked. They are not s common on the grocers' shelves now a they were a few years back.

Toast, Essence of.—This is liqui burnt sugar, caramel, or spirit colou ing. Used for making extemporaneou toast and water (3 or 4 drops in tumbler of water); also to flavour soup gravies, etc.

Tobacco.—Ar. *Bujjerbhang*; D and Sw. *Tobac;* Du. and Rus. *Tabak* F. *Tabac;* G. *Taback;* Hind. *Tun bakü;* It. *Tabacco;* Mal. *Tambracoo* Pol. *Tobaka;* Port. and Sp. *Tabaco* Turk. and Per. *Tutun;* W. *Fygly* (See also *Cheroots, Cigars, Herb Tobacc* and *Snuff.*)

Tobacco has both friends and foes a over the world. In England they fir began by calling it "herba panacea, "herba sancta," "sana sancta Indorum, etc. In China and Japan it is calle "*fool's herb*" and "*poverty herb*," bu the cultivation, smoking, snuffing, an chewing of the popular weed has sprea

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from the Americans, in the 15th and 16th centuries, throughout the whole of the tropical and sub-tropical regions of Africa and Asia, and it has since spread even into the temperate and sub-Arctic regions, so far as Norway, and so far south as Van Diemen's Land. Few plants, if any, can be compared with tobacco for the rapidity with which it has overspread the world, and the blessings it is said to have bestowed on mankind in easing labour and cheering leisure. It is credited with having had miraculous effect in taming savage nations.

The ancient Scythians were the ceaseless scourge of Hamitic (Egyptian), Semitic (Assyrian and Babylonian), and ancient Aryan (Indian, Persian, Greek, and Roman) civilisation. They are referred to by the prophet Jeremiah as "a seething caldron," ever boiling over in fierce and cruel eruptions from the North. They have now become the modern Turks; and the magic which changed them from restless and destructive nomads into the quiet and only too conservative sedentary Turks was, Von Montke tells us, in his "Letters from Turkey," none other than the acquired American habit of smoking tobacco! and Spenser, in "The Faery Queen," refers to it as "divine tobacco," while Lilly, the Euphuist, in "The Woman in the Moone," terms it "our holy herb nicotian." Marston, in "What You Will," gave it as a matter of experience that "music, tobacco, sack, and sleep, The tide of sorrow backward keep." Byron also sings its praises in "The Island":—"Sublime Tobacco! which from East to West, Cheers the tar's labours and the Turkman's rest." Space, however, forbids insertion of a tithe of the praises and anathemas bestowed on the uses and abuses of tobacco.

There are numerous species and varieties of the plant, but only two species of leaf popularly cultivated. *Nicotiana Tabacum*, with pinkish flowers, is the chief, and this is the source of Virginian, Havana, Latakia (Laodicea), and Manila varieties. It derived the name *Nicotiana* from Jean Nicot, of Nismes, a French Ambassador at Lisbon, who first sent the seeds from Portugal into France by Francesco Hernandez, Spanish physician to Philip II., in 1560. It is a native of South America, and was first discovered in Cuba by Columbus in 1492. It was brought into England by either Sir Walter Raleigh, Sir John Hawkins, or Sir Francis Drake (historians differ) about 1585, and, although the original consumers were sailor men, it was Raleigh brought smoking into fashion among the young gentlemen of the Court. Of course, tobacco grew in Cuba before Columbus got there. It was known as *cohiva*, and was produced along the Cumanas River, in the eastern part of the island, and Cortez carried Cuban seed to Mexico.

The Aztecs, however, cultivated tobacco before the time of Cortez. They called it *tetl*, and used it as a narcotic, and paid it as tribute to the Court of the splendid Montezumas. It was the lotus leaf of the new West, and priests used it in their divinations.

Cuba has, however, the honour of having given tobacco to the world, and, what is more remarkable, of having retained the reputation which it acquired of being the island in which it was grown in perfection.

The Spanish called the roll of "herbs" *tobacco*, which name has since come to be applied with slight variations in different countries all over the world to the plant itself, though still used in Cuba to designate the completed cigar.

In the eighteenth century the now celebrated region of the Vuelta Abajo was found to produce the best leaf, and from that period dates the prosperity of Cuba. No other region holds in combination such elements of successful cultivation as that comparatively restricted district known as the Vuelta Abajo. The entire section covers but a small portion of the province, being, perhaps, one hundred miles in length and twenty-five in breadth. Scarcely any of the *vegas*, or tobacco farms, occupy more than thirty-three acres, and, as their local appellation indicates, are mostly in low and damp localities, or along the margins of rivers. Here the tobacco plant flourishes

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luxuriantly. The plant grows to a height of from six to eight feet, being carefully divested of all superfluous leaves, that the resultant product may be finer and stronger. With the experience derived from ancestral tradition, the planter watches the plants throughout the season, carefully prunes and buds, wars against the numerous insect foes, and guides his pet production to development.

It is said that he can produce tobacco of whatever strength or quality he desires; and it is this constant care, combined with the soil and climate of the Abajo, that sustains the world-wide reputation which the product of that section has acquired.

"Tobacco of the best quality," says a Cuban expert, "such as is produced in the choicest *vegas* of the Vuelta Abajo, is known by its even tint of rich dark-brown and freedom from stains, burning freely, when made into cigars, with a white or brown ash, which will remain sometimes on the cigar until it is half smoked without falling off."

Tobacco is, however, now cultivated in most parts of the world, the warmer countries producing the best. One of the most highly esteemed varieties is *N. macrophylla*, as grown in Maryland, and which is also known as Cuban or Manila tobacco; its leaves are broad and its flowers a reddish-purple.

The Virginian plant, *N. angustifolia*, also ranks very high; it grows 4 to 8 feet high, bearing large leaves and pinkish flowers of a trumpet shape, followed by two lobes full of innumerable small, fine seeds.

A smaller plant, *N. rustica*, sometimes called green tobacco, with greenish-yellow flowers and roundish leaves, is more hardy, and is the chief source of Brazilian, German, Hungarian, and East Indian growths, but is mostly used for cigarettes.

There are altogether about forty named species, but the above are the only kinds extensively cultivated, although the names and flavours of tobacco and cigar productions imported are very numerous, as also are the registered titles given to fancy brands in this country. They are nearly all sweetened, coloured, flavoured, and perfumed, artificially.

Excellent leaf is grown in Sumatra, and most of it is used for cigar wrapping. In Colombia the plant grows everywhere, but is cultivated mainly in four districts — Magdalena Valley, Palmyra, Giron, and Carmen. The leaves are picked only as they ripen, and not all at once, as in most countries. They are dried and then fermented in bundles, and only cigars are made.

The cultivation of the plant in England was at one time an extremely profitable undertaking.

In Gloucestershire, Surrey, and a few other counties it was quite common; also in the South of Ireland; and it has been tried in Scotland, but the flavour of these growths have not been satisfactory. The Irish especially was a very strong and coarse tobacco, with an abnormal percentage of moisture and nicotine. A considerable amount of leaf is now imported from Japan. Being larger and thinner than the Manila leaf (see *Manila Tobacco*), it is well adapted for wrapping the cigar, and, being excellently dried, 40 or 50 per cent. of moisture can be added, thus allowing the manufactured product to be sold at a low price.

Bird's Eye is referred to under its own heading.

Cavendish, *Cake*, or *Plug Tobacco*, *Negro Head*, etc., consist of tobacco leaves moistened and then compressed into solid blocks, the best leaves being used for the outside wrappers, and the worst for "fillers."

Molasses, or glucose, are the popular liquids employed to moisten the leaves. (See *Cavendish*.)

Roll or *Spun* tobacco, *Thick Twist*, etc., are also made from similarly moistened leaf, spun or twisted into rope form by a machine, and finally subjected to hot pressure.

These cake and roll tobaccos are by the Excise not allowed to be sweetened, except *in bond*, and, therefore, they are not made to any large extent, otherwise the process is very simple.

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"*Navy Cut*" was first brought out about 1878 by F. & J. Smith, Glasgow.

Pig-tail and *Thin Twist* are made in same way as roll or thick twist, only spun finer and smaller. Superior qualities are, of course, made from the finest leaves, but a great deal of inferior material, boiled stalk, etc., is usually worked up into the cheaper qualities, with 30 or 40 per cent. of water, because the British workman wants "big plugs for little money."

Shiraz Tobacco, or *N. Persica*, is a commercial variety produced in Persia and Turkey. It is really the same as *N. alata*. Syrian tobacco, which includes the celebrated Latakia, is very mild, and said to contain no nicotine.

Stripts, or *Strip-leaf*, is the technical name for the raw material from which the stem of the leaf has been taken away before packing it for export from the countries where it is grown, while that packed whole, stem and all, is designated "leaf," or "hand-work."

A large proportion of the tobacco leaf used in England comes from the Southern States of America, and low-class strips may often be bought as low as 2d. or 3d. per lb. in bond. The total American crop is about 650 million pounds a year, and nearly half of it is exported, Pennsylvania and Virginia yielding the most. On the plantations the plants are cut close to the ground as soon as the lower leaves become rough and mottled with yellow spots, and are left lying a day or two in the sun to wither and soften. They are then placed in heaps under shelter to sweat, the heaps being turned over daily for three or four days. The leaves are next hung up on sticks in bundles, head downwards, to dry in sheds; and in about three weeks they are taken down, and the leaves, stripped from the stalks, are tied in small bunches, called "hands." These are sprinkled with water and "bulked," or laid in heaps to heat a second time, for about a week, after which they are again dried and sorted, and are finally packed in hogsheads for export to the manufacturers to make into cigars, or smoking tobaccos, or into snuff. If dried too quickly the leaves become too brittle.

In Virginia the size and make of the hogsheads are prescribed by law. They must be made of seasoned pine or poplar, they must be 4ft. 6in. long, 3½ft. diameter at one end, and only 3ft. 4in. at the other. The hogsheads must have 8 hoops, the staves must not be wider than 5, nor narrower than 3, inches; must be ⅝ of an inch thick, and dressed on inside, and the heading must be 1 inch thick. The difference in diameter is to allow the contents to be inspected without disturbing the mass; the widest end being first taken out and the hogshead being then stood small end up, the hogshead is easily raised, and leaves the tobacco leaf standing for examination, after which the hogshead may be refitted on. The leaf in the hogshead averages about 1,000lbs., and the Stanley Dock warehouse in Liverpool usually contains about 100,000 of these hogsheads.

On arrival in England every cask is put in the bonded warehouses and opened, and there any portions not considered worth the duty are removed and burnt.

After the duty is paid, the first thing the manufacturer does is to damp the leaves with water from a fine-rosed watering pot, and then leave them a day, so as to be able to work them without breaking.

"Stripts" require sorting only, but the "leaf" or "hand-work" tobacco has to be stripped of the mid-rib by experienced hands, without tearing the leaf, the largest and strongest of which are selected for cutting and spinning, and the best shaped for the "wrappers" of cigars—broken and defective pieces being used as "fillers" for cigars. (The mid-ribs are usually ground to make *snuff*.)

For "smoking" sorts, the damped leaves are then finally cut or shredded by machinery, and gradually or partially dried on canvas trays by means of steam, but at this stage molasses water, syrups, perfumes, acids, etc., and other special adjuncts come into play, according to the ideas of the various manufacturers.

From refuse tobacco, boiled stalks,

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etc., a decoction known as sheep-dip is made; and often the waste is ground very fine for gardeners' use, to keep noxious insects away.

The chief adulterants in tobaccos are dried beetroot, chicory and cabbage leaves, rhubarb, dock, burdock, coltsfoot, paper, etc., which have been steeped in tobacco water for a long time. These are also often used in cigar-making, especially in Germany and Switzerland.

In smoking mixtures prepared camomile flowers, brown paper, logwood, liquorice, etc., up to 70 or 80 per cent., have been found.

Some years ago a popular retailer in Soho was heavily fined for adulterating his tobacco with horse dung! Excess of water is also to be guarded against, and of late years the use of oil and glucose syrup have become very common, to increase the weight.

Tobacco is a powerful narcotic, sedative, and emetic. Its action is relaxing, and eventually depressing, sometimes producing fainting, and even death, in comparatively small quantities. Its deleterious properties depend on the presence of *nicotine*, one of the most frightful vegetable poisons known, and of which ordinary Virginia tobacco contains from 6 to 7 per cent. (See *Nicotine.*) A single drop will kill a dog. What will suit one class of customers is very distasteful to another class. The man of sedentary habits prefers a small content of nicotine. On the other hand, the farm labourer, the sailor, the fisherman, and nearly every outdoor labourer is better pleased with strong tobacco.

The consumption steadily increases, and seems likely to flourish more than ever. The total grown yearly has been reckoned at about 2,167 million pounds. Of this amount 957 millions are produced in Asia and British India, 660 millions in America, 436 millions in Europe, 110 millions in Africa, and 4½ millions in Australia.

Caricaturists in depicting a German are always putting a big pipe in his mouth. The pipe is national, indeed, but the Germans as a nation are far from being the greatest smokers. They do not smoke more than Frenchmen, Russians, Swedes, or Hungarians. The Yankees and the Swiss are the most inveterate smokers on earth. In these two countries the consumption of tobacco *per capita* is much greater than in Germany. At the same time, America raises more tobacco than any other country on the globe, and British India comes next.

The countries consuming less than 1 kilogram (2 1-5lbs.) per head annually are: Finland, Roumania, Spain, England, Germany, and Russia.

Sweden, Denmark, Norway, and Japan average 3⅗lbs. each *per capita*, while Austria-Hungary, Greece, France, and Turkey are put at about 4⅘lbs. per head; but the greatest consumers of tobacco in the world are the people of the United States, Switzerland, Holland, and Belgium, where the annual consumption is from 5½ to 6½ lbs. for each inhabitant.

The quantity paying duty and cleared for consumption in the United Kingdom averaged 13½ ozs. per head of the population in 1841. In 1851 it had increased to 16¼ ozs. per head; in 1861 it reached 19½ ozs.; in 1871 it amounted to 21½ ozs.; and in 1899 to 30 ozs. per head. In other words, in 1841 this country, with a population of 26 millions, consumed but 23 million pounds, while to-day, with its 40 millions, it consumes nearly 74 millions, the duty on which is about £11,000,000 a year. *Ex fumo vivens!*

In his Budget, 1896, the Chancellor of the Exchequer stated that in his humble opinion everything spent on tobacco by those who had enough to eat was waste, and it was calculated by the Customs authorities that no less than £1,000,000 was literally thrown into the gutter in the shape of ends of cigarettes and cigars. He might also have shown that, while the aristocrat, smoking the best cigars, only pays an *ad valorem* duty of about 30 per cent., the poor man, buying the commonest shag, pays about 600 per cent.!

Female smoking among the poor decreases, but among juveniles the habit appears to flourish more than ever.

Retailers must hold a 5/- licence, and have their name painted over the door.

It is not a universal custom for grocers to stock tobaccos. A grocer is sure to have many fastidious customers, and even the least extreme of them can hardly watch with complacency the shopman turning from shag to sugar, or from loosening out Cavendish to cutting cheese or bacon. It is, however, quite common for the smaller general shops to sell tobaccos both loose and in packets, and many first-class establishments now stock a few of the most popular packeted or tinned sorts. Given a cool, dry place for storage, these are very easily managed, but loose tobacco requires more skilful handling.

The aroma of the herb is easily affected by its surroundings, and without experienced management it is often an unprofitable commodity. Much may be done by keeping the tobacco and snuff business distinctly apart from edibles. Separate scales, weights, knives, paper, etc., should also be relegated to the tobacco service.

Many old hands are apt to forget that lady customers are very sensitive, and that some have an extreme aversion to these narcotics.

Tobacco Pipes, etc. — The word "*Tobacco*" itself was derived by the Spanish from the Haytian name "*tobako*," a pipe used in smoking it. *Amber*, in large quantities, is mined at Palmnicken and Kraxtepellen, on the Konigsberg coast, Germany. It was formerly picked up on the shore, or floating on seaweed in the sea, but is now sought for by mining operations, by dragging, and by diving. The largest piece ever found weighed about 11lbs.

The production of German amber in 1894 amounted to 220 tons, or about 50 tons more than in previous years. By far the larger portion of the above quantity is put out by the two mines of Palmnicken and Kraxtepellen, belonging to the firm of Stantien & Becker, while the smaller portion of 6 tons only is obtained by dredging and searching the foreshore of the Baltic Sea. The two mines named above, with the home industry, employ about 1,200 persons. In addition to the above, amber is now largely imitated by other products.

Meerschaum is a German term from *Meer* (sea), *schaum* (scum), because it is so light that it will float on water. It is really a mineral composed of silicate, magnesia, and water. Being very light, white coloured, and easily worked, it is largely used for making pipe bowls.

Briar-root Pipes, or, as the French call them, "Pipes de Bruyère" (famous as G.B.D. pipes), were introduced in 1861. They have nothing to do with briar, but are mostly made from the roots and stems of the Tree heath (*Erica arborea*), preference being given to the male variety.

A large quantity of these roots are collected on the hills of the Tuscan Maremma, where the plant grows luxuriantly, and attains a large size. Calabria is at present the main centre of production. At Leghorn, Sienna, and Grosseto, where there are works for preparing the material, the roots are cleared of earth and any decayed parts are cut away. They are then shaped into blocks of about 25 sizes with a circular saw, set in motion by a small steam engine.

Great dexterity is necessary at this stage in cutting the wood to the best advantage, and it requires a long apprenticeship. The shapes are Marseillaise, Reléve, and Belgian.

The blocks are then placed in a vat and subjected to a gentle simmering for 12 hours. This gives them the rich, yellowish-brown hue. These rough blocks are then packed in sacks of 40 to 100 dozen each, and sent from Leghorn to France (St. Cloud), where they are turned, bored, and finished into the famous G.B.D., or Pipes de Bruyère, or Nuremburg, in Bavaria, and various towns in Rhenish Prussia and Thuringia. Very few, or none, of these pipes are made in England.

Cutty, the name of a particular kind of pipe, is a Scottish term for *short*, hence its use as an adjective in cutty, or cuttie, pipe; but some say it is a corruption of Kutaich, a city of Asia Minor, where a species of soft, white stone is found, which is exported by the Turks for the manufacture of tobacco pipes.

Queen's Tobacco Pipe.—This name was given by the public to a curious-shaped

kiln, or furnace, which used to stand near the tobacco warehouses at the London Docks.

It was only about six feet in diameter at the base, and gradually tapered up to a narrow, round chimney.

Inside, it was customary to pile up smuggled or damaged tobacco, cigars, tea, silks, and other contraband or unclaimed goods seized by the Excise, and from time to time the "Queen's Pipe" would be lighted and the whole contents burned.

It was long considered a wasteful proceeding, and recently the system has been altered, and most of such goods are now sold by auction to the public at periodical sales known as "Customs sales."

Tobacco Boxes.—Strangers new to Westminster are a little startled and amused when they are peremptorily asked, "Have you seen the Tobacco Box?" It is not until the stately collection of oaken and silver cases have been seen (weighing now 102lbs. in all) which enshrine the modest little horn tobacco box that one realises the historical, literary, and, above all, Westminsterian associations which invest it. There is probably nothing like it in the world. Originally a tobacco box, purchased for fourpence at horn fair, this now beautifully emblazoned plate was wont to pass through the successive hands of overseers for nearly a century and a half; as each guardian held it it was a traditional custom for him to make some addition to it in the shape of silver. When the "Tobacco Box" became so large that the expense of enclosing it in new silver cases would have fallen too heavily on the overseers, it was enclosed in a handsome octangular case of oak, which now stands more than three feet high, and is covered with silver plates, one of which is added every year. No antiquarian or visitor to St. Margaret's, the M.P.'s church, at Westminster, should miss seeing the "Tobacco Box."

Tocusso.—See *Teff.*

Toddy.—F. *Toddi;* G. *Toddy.* (See also *Palm Sugar*, *Palm Wine*, etc.)

A sweet juice obtained in Ceylon and other tropical countries from various trees of the palm order.

When the trees are ready to burst into flower the flower stalks are cut off, and a deep incision is made in the stump, from which, after repeated beatings, the liquor runs into the vessels hung to receive it. A tree may yield about six pints a day.

When fresh, toddy is a cool, delicious, and wholesome drink, but after standing a few hours it ferments and becomes highly intoxicating. In Ceylon it is commonly used as yeast, also as vinegar; but the great bulk is made into *Jaggery* or *Palm sugar.*

Toffee, or Taffee.—(See also *Everton Toffee.*)—Usually made of light brown sugar, with more or less of butter, and flavoured with a little essence of lemon or vanilla.

The sugar is boiled in a clean pan, with 5 per cent. up to 30 per cent. of its weight of butter, until a teaspoonful of the boiling syrup, when dropped into cold water, forms a lump that breaks crisply. It is then proved to be sufficiently boiled, and the whole is ready for pouring into buttered tin moulds to cool.

Toilet Rouge, or Carmine.—(See also *Jewellers' Rouge.*)—An artificial scarlet face powder, used as a paint by actresses, fashionable ladies, and the *demi monde*, to heighten the complexion.

Perhaps the best is made by mixing 16 grams of carmine and one drachm of carbonate of magnesia.

A high quality is prepared by rubbing 1 part of carmine (the colouring matter of cochineal) into 8 parts of finely-powdered French chalk, and sometimes a little safflower dried and powdered is added.

One kind, prepared from dried safflowers (*Carthamus tinctorius*) and powdered talc, is brought from China in small papers or pots. A common quality is often made of vermilion and almond oil. Occasionally the above preparations are, with the addition of oil, formed into pastes.

A cosmetic made of cotton-wool saturated in an ammoniacal solution of car-

mine, and then dried, is known as Spanish Lady's Rouge.

Toilet Soaps. —(See also *Soaps, Fancy Soaps*, etc.)—A toilet soap is, or should be, essentially a variety of soap made from choice selected kinds of fatty matters judiciously combined with alkalies in such fashion that the product contains practically no "free alkali" or alkali in excess. In other words, it differs from ordinary laundry soap chiefly in the *quality* of the materials used in its manufacture, and the care and skill employed in so conducting the operation and proportioning the ingredients to one another, or in subsequently purifying and refining the crude product as to obtain as a final result a material in which the alkali originally used has been all but perfectly transformed into true soap, leaving none uncombined with the fatty matters employed.

Cheap Toilet Soaps.—Unfortunately, there are in the market a large number of so-called "toilet soaps" wholly unfitted for such uses. The materials are very coarse and rank, and the amount of alkali—caustic soda—is either excessive or imperfectly combined, so that they are far too corrosive in their action upon tender and sensitive skins, especially infants' and delicate ladies'. Their only claim to toilet use is the tablet form, colour, and perfume, but their action may almost be compared with mustard plasters or diluted blisters. Persons with tough, sound, healthy skins may for a time use even the most alkaline scouring soaps without material injury, although the thousands of faces with rough, sore scurvy, like patches, which we meet with betray the irritating effects of silicate of soda and other strong alkalies, or of poisonous pigments, such as red lead, mercury, arsenic, and copper.

Tokay, or Auspruch Wine.—A very sweet mountain wine, made at Tokay, a town in Northern Hungary. It is somewhat aromatic, and is generally used as a dessert or *liqueur* wine. In Hungary this wine is the national beverage. It improves very much by keeping, and old Tokay, called *Vino Vitrauno*, the demand for which greatly exceeds the supply, has been sold at £36 a dozen at Cracow, which is the principal depôt for it.

Imperial Tokay is a very rich and luscious product, with a rare delicacy, but rather peculiar taste.

There are also Californian and other Tokays made up in imitation of the above, and merely labelled and sold as *Flaming Tokay*.

Tolu Balsam.—An extract from the stems of the plant *Myroxylon Toluifera*, native of Venezuela and New Granada, and used in cough lozenges.

Tom and Jerry.—See *Gin*.

Tomatoes, or Love Apples.—F. *Tomates*; G. *Tomaten, Gold-oder, Liebesäpfel*.

Although usually classed as vegetables, tomatoes are—like gourds, melons, etc. —on the borderland of fruits, and are the berries of the annual plant *Lycopersicum esculentum*, of the night-shade family, and native of the tropics. The plants, of deep green colour, and hairy, grow 3 to 10 feet high, with alternate leaves, and bear yellow flowers. Both the stem and the leaves emit a rather disagreeable odour, but the fruit is usually free from it, especially if grown in the open air.

Several varieties are now cultivated in all warm and temperate countries, and tomatoes are of various sizes, forms, and colours; some kinds are no larger than cherries, while the larger often exceed apples in size.

The *Achme* and the *Paragon* are very productive varieties, and are famed for their smooth, solid, and well-flavoured fruits of bright crimson colour.

The *currant tomato* produces bunches of small fruit looking like fine red currants. The plum-shaped varieties, which grow in clusters, are the best for preserving or pickling. The colour of the fruit while growing is green, but when ripe is mostly red, varying from deep crimson to scarlet, but some sorts remain yellow, and one kind is nearly white.

Immense quantities are now being imported every year from Canary, Spain,

Portugal, France, and America, both fresh in 7lb. to 10lb. boxes, 16 boxes to the case, and also in tins and bottles. Most of the 3lb. tins come from Maryland, U.S.A., the favourite brand being a rather small variety, canned whole; the bottled from France (mostly prepared in the Var and Bouches-du-Rhone departments), and mostly heavily coloured red with cochineal or aniline dyes, and about half a million bushels in boxes from the Canaries.

Tomatoes are also beginning to be cultivated as open-air crops in many parts of England; indeed, are almost naturalised both in Cornwall and Sussex. It is a common error to suppose they must be grown under glass. They not only grow, but fruit readily if the plants be treated properly, and pruned enough. Only one stem should be allowed to grow; all others should be removed, and this main stem should be checked by nipping off its top as soon as five or six fruit spurs have formed. Each fruit spur will then bear and ripen about a dozen excellent tomatoes. American tinned tomatoes are somewhat inferior in flavour to those from the South of France.

Some of the American preparations have been found artificially coloured with an aqueous solution of *bromeosin*. Imported tomatoes are, however, very inferior to Guernsey or English growths, and many of them simply bags of insipid seed and skin, compared with the fine meaty kinds grown around Worthing and other places in the South of England; still some very good qualities grown from English seed come from the Canary Islands. The seeds are sown in August or September, and transplanted a month later into well-irrigated land, with about 9·300 plants to the fanegada, equal to 1 3-5 acres. Soft, pulpy, and acid tomatoes are very nutritious and wholesome; they possess important laxative and antiscorbutic properties, and, although they have only lately been coming into use with the general public, they have advanced in general favour, both raw and cooked, more than any other fruit.

Tomatoes may be bottled by the Appert system, like any other kind of fruit, but they do not, as a rule, keep well unless plentifully mixed with vinegar and spice. They are cheapest in England from July to October.

There is great room for improvement in the packing of tomatoes. The early arrivals in the markets should not be packed in 20lb. baskets, but in smaller cross-handled baskets, holding 3 to 6 lbs. each. As they become more plentiful, they might be put up in baskets of 6, 9, or even 12 lbs. All that is wanted in packing is a little hay or leaves in the bottom, then a layer of tissue paper over that, and round the sides, the stalks should not be too long and should be left on, and the peck or cross-handled basket tied over with brown paper.

Importers.—Elder, Dempster, & Co., 20 Old Haymarket, Liverpool, and 46 Long Acre, London; E. W. Fyffe, Son, & Co., 40 Victoria Street, Liverpool, and London.

Tomatoes Canned).—The fruits are scalded to loosen the skin, and then dipped, in sieves, into water, heated by the injection of steam for half a minute.

They are then skinned and picked over, and passed into the steamer. Thence they fall into the hopper, and are fed by the stuffer, a cylinder worked by a treadle, into the cans. The filling of these is adjusted by boys, and they are sealed up. The cans are then boiled for two hours, then partially cooled, the air is let out by a pin-hole, and they are at once soldered up, and the cooling is completed. The annual pack in the United States is from 3 to 4 million cases, each containing 2 dozen tins. The chief States, according to production, are Maryland, New Jersey, Indiana, California, Delaware, Ohio, Missouri, New York, etc. Prices in the New York market range from 55 to 80 or 90 cents per dozen tins. Originally the market grades: "Extras," "Standards," and "Seconds," indicated the *quality* of the tomatoes, but now these marks seem to indicate the *quantity* of tomatoes in the tins, the quality being similar in all. The so-called 3lb. tins of "Seconds" appear to be half water.

Tomato Conserve. — A French

purée, or preserve, consisting of the ripe pulp of the best tomatoes deprived of the skin, seeds, and most of the water.

Although mostly imported from France, either in glass bottles or tins, this article was formerly all made in Italy. It is produced in much the same way as tomato sauce, minus the spices.

These red conserves, pastes, sauces, etc., are often highly coloured with coal-tar dyes or cochineal.

Tomato Paste.—A new condiment, known as tomato paste, has been lately introduced by a South Jersey firm of canners. According to the *American Packer*, it is made from the peelers' waste at the cannery. The waste is carried by a chain of buckets from the heap into a revolving cylinder of sieves. All the quintessence is here extracted, and goes by gravitation into tanks of several hogsheads each, the seeds, skin, and hard green pieces going into the creek. The pulp rises to the top of the tanks, and the juice is let out of plug holes. The pulp is put in manila bags, and heavily weighted to press all the juice out that is possible. The pulp is next put into a trough and seasoned with salt and spiced water, and put in barrels. To prepare it for market it is packed in different sized cans, and the cans, after being capped, are subjected to a hot-water bath, to remove the acid and other foreign substance.

Tomato Sauce.—This is best made from sound, ripe fruit, and not from the loose watery sorts.

1. Put the tomatoes into an earthen jar, and set it in a warm oven till they are perfectly soft, then remove the skins from the pulp, and mix this with hot spiced white vinegar in which a few cloves of bruised garlic have been steeped. Add ground ginger, cayenne, and salt to taste.

Rub it through a fine sieve, and keep the mixture in small wide-mouthed bottles, well corked, and in a dry place.

2. Take 6lbs. firm tomatoes, 1lb. of apples, 1lb. of onions, 1 oz. of garlic, 1 oz. of ground cloves, 1 oz. ground ginger, and 3 ozs. salt. Cut and boil 2½ hours, strain through a hair sieve, and remove the skins, etc. When cold, add sugar and cayenne or other spice to taste. Then re-boil the lot for half an hour; bottle and seal, and it will keep good for years.

For best qualities apply to Charles Cocks & Co., Reading, or Allen Jeeves & Sons, Seddington, Sandy, Beds.

Tombac.—See *Persian Tombac.*

Tongues.—F. *Langues;* G. *Zungen;* Port. and Sp. *Lenguas.*

These are sold by the shops in various forms. *Ox* tongues are usually so described, but *Pigs' tongues* and *Sheep's tongues* are generally sold as *Lunch tongues.* Westphalian and *Reindeers' tongues* are referred to under their own headings.

About 1,000 tons of tinned ox tongues are put up and exported yearly from Fray Bentos, in Uruguay, where *Liebig Extract, Tassajo,* and Dr. Garcia's *Carne Liquida* are made. They also come from the United States, but it is only recently that they have been cut into pieces small enough to go into 2lb. cans. According to the New York *National Provisioner*, "before sending to the pickling and curing vat, the tongues should be well washed and the root of the tongue trimmed, removing the wing bones. The pickle should be of a strength not above 75°, and tongues remain in it until thoroughly cured throughout. The tongues, when ready for canning, are cooked for two hours in a temperature of 180° F. They are then removed and drained and chopped sufficiently small to enable the pieces to be stuffed into the cans by the stuffing machine. Care must be taken not to leave any small bones in the tongue meat, as they are liable to break the stuffing machine.

"In the 2lb. cans stuff 1lb. 13 ozs. of tongue. Wipe the cans well and stop centre vents after capping the cans. The cans are then placed in the open water bath at 212° F. for two and a half hours for processing the first time. Remove and open vents, afterwards stopping them up again. Place in bath again and give them one and a half hours more. Take them from the bath, again opening

and stopping the vents once more, and finally put the cans in the water bath and boil off two and a half hours, after which they are removed and sent to the shower-room, where they are showered until cool. The cans are subsequently washed and labelled.

"In processing cans in open water bath it is very desirable to have covers on the vats, as better results will be obtained, and the steam will not fill the room. This often causes great annoyance and loss of time in working.

"In weighing meat for the cans for stuffing it is necessary to weigh this accurately, as an ounce or two over weight will bulge and spoil the can."

In cooking fresh tongues, they should first be boiled with a fair percentage of salt and saltpetre in the water. This turns fresh tongues scarlet. When a little high from damp storage or imperfect curing, a teaspoonful of carbonate of soda should be added. A teaspoonful of white sugar to every 5lbs. of tongue is also good. It softens the fibrine, and gives the salted tongue the mellow taste of a fresh one. ongues require four to five hours' boiling, and should be peeled and brushed over with *aspic* or *glaze* whilst warm.

For wholesale prices, apply to Morris & Jones, 13 to 19 Sir Thomas St., Liverpool, Proprietors of the "*Three Star*" *Brand Lunch Tongues* and the "*St. Paulo*" *Brand Ox Tongues.*

Tonka, or **Tonquin Beans.**—The fragrant seeds of the tree *Dipteryx odorata*, which grows to a great size in the West Indies, also in Guiana, the great Amazon valley, and other parts of South America, but especially in Cochin China and Venezuela, which latter country alone exports some 100,000lbs. yearly from Ciudad Bolivar, as *Angostura*, value 6/- to 8/- a lb.

A considerable quantity are also exported annually from Santarem, Tapajos, on the Amazon. Its Brazilian name is *Cumara*, whence the chemical name "coumarin." (See page 302.) Good black sorts are often sold on the London market at about 1/8 per lb., and old, or foxy, grades as low as 7d. and 8d. per lb. The best grades contain about 1½ per cent. of coumarin. The pods are of oblong shape, but contain only a single seed, shape of an almond, but much longer, and covered with a shiny black skin. These beans have a remarkably

Tonquin Bean Plant.

agreeable and aromatic odour, very like that of dry hay; indeed, if a bean be placed in a wardrobe or drawer containing clothing, it imparts a fragrance that may last for years. Tonquinas are extensively ground up and used as scent for snuffs, tobaccos, satchets, etc. They used to be much better known in this country, and got their name from being long shipped from Tonquin, a French Colonial possession at the South of China.

Tonquin Essence or *Oil*, known in France as *Coumarin*, or *Cormarine*, from it, and in Germany as *Tonquinöl*, is very popular everywhere as a perfume, and imparts a kind of musk flavour to confectionery.

Tonquin beans are also used in low-priced vanilla extracts. The natives in the countries where they grow often use the oil as hair-oil.

Apply to C. Windschuegl & Co., 1, Leadenhall Street, London, E.C.

Tonkay, or **Twankay Tea.**—See *Hyson Tea.*

Tookow.—The seeds of the yellow

water lily (*Nuphar lutea*), which, when separated from the capsule and husks, is the staple food of the Klamath Indians in North-West America.

Toolsie, or Toulsy Tea.—Prepared in India from the plant *Ocymum album* (*basilic*), natural ord. *Labiatae*. This herb has an extraordinary aromatic odour, and in India the natives engaged in bee culture rub their faces, hands, and feet with it, when extracting the honey from the hives. The juice is given to children in colds, and the dried leaves are used as a substitute for tea.

Tooth Powders.—The ingredients commonly employed in making these are—Chalk, charcoal, coral, cuttle-fish bones, burnt alum, red sanders, Venetian red, Venetian talc, raddle, ochre, pumice, areca nut, powdered sugar, bicarbonate of soda, borax, castile soap, cream of tartar, etc. Colouring matters and perfumes are added, such as orris, cassia, clove, cinnamon, musk, vanilla, rosewood, otto of rose, camphor, myrrh, ambergris, sandal-wood, cochineal, etc.

The dry materials are usually pulverised and thoroughly mixed; some are levigated or ground in water, as chalk, coral, etc. Carbonate of magnesia forms a suitable tooth powder for children. Acids and salts should not be used often. *Camphorated chalk* is usually made from 3 parts precipitated chalk and 1 part of camphor pulverised by the aid of a few drops of spirit. For *Charcoal tooth powder*, mix 1 part of prepared charcoal and 3 parts of powdered chalk.

For Tooth Powder materials, apply to C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

To prevent tartar, rinse the mouth freely once a day with water in which a pinch of alum has been dissolved. It is harmless to the teeth, and keeps the gums in good condition, preventing the accumulation of tartar.

Topinambours, or Jerusalem Artichokes.—See p. 501.

Tops and Bottoms (Biscuits).—Mostly used as food for infants and invalids. The virtue of Tops and Bottoms and similar toasted biscuits, as well as biscuit powders, infant foods, etc., consists in their having been submitted to a certain amount of heat, so that the starch is pre-digested, thus rendering the food suitable for delicate children or persons with impaired digestive organs. Of course, ordinary people prefer doing their own digesting.

To prepare Tops and Bottoms for use, pour a sufficiency of boiling water over the biscuits in a basin, let it stand a minute or two, then strain off the water, sprinkle with a little sugar, and add hot milk.

Torches, or Links.—The most ancient of the artificial illuminants devised by man. The torch used in ancient times was constructed of some readily combustible material, such as resinous wood or hemp steeped in oil or tallow; and in mediæval times the same object was employed to light up the festive board of the feudal nobility. They are still prepared for sale in London. Wholesale prices, 22/- to 28/- per gross.

Torfu, or Bean Curd.—(See also *Soy*.)—A Japanese food product which is said to approach more nearly to animal food than any other vegetable. It is made by powdering the yellowish-white beans grown chiefly in the North of China and the Himalayas. The powder, or meal, is impregnated with brine, and undergoes elaborate treatment until coagulated and preserved in a mass. It contains about 1·5 its weight of fat and nearly 2·5 of nitrogenous matter, and when wanted for use is cut up into slabs, which may be fried or toasted, and saturated with soy, so as to taste like a sweet bread, or it may be divided into small squares for soups, sauces, etc.

Torrone.—Port. and Sp. *Turron*.

A well-known Italian sweetmeat of the *Nougat* type, composed of sugar and almonds, and especially popular in Rome at Christmas time.

Tortillas.—(See also *Johnny Cake*.)—A kind of pancakes or omelets made

from maize in Mexico, Peru, and other South American countries.

The maize is ground between two stones, the meal mixed in a batter, and then fried. They are next covered with a sauce made of lard and pepper, and then rolled up in a size.

Touch-paper. — Paper which has been soaked in a solution of saltpetre and then dried. When ignited it burns away slowly in sparks and without flame. Used most in the manufacture of fireworks.

Tous Fruits.—See *Tutti-Frutti*.

Tous-les-Mois, or Canna Starch. —*Tous-les-mois*, or *Touloula*, is the French name given to a superior large-grained kind of arrowroot, obtained from the large tuberous roots of *Canna glauca* and *Canna edulis* (edible reed), a plant native of Peru, and regularly cultivated in St. Kitts, and in Grenada, West Indies; also more recently in Queensland. It is best known along the western coast of South America by its native name of *Achira*.

To the naked eye *Tous-les-mois* appears very like fine potato starch, but under the microscope its granules are found to be coarse, white, and oval, not unlike oyster shells in form, and larger than the starch granules of any other known plant.

Tous-les-mois is prepared like arrowroot, is of equal dietetic value, and even more easily digested, but does not remain in jelly form so long.

It also belongs to the same order as that which yields true arrowroot, but whether it should be sold as "arrowroot" is not quite certain.

Importers.—The Pure Cane Sugar Company (J. Philip & Co., Agents), 4 Fenchurch Buildings, London, E.C.

Towel Gourds.—See *Loofahs*.

Trade Papers, Books, etc.— A few of the principal publications interesting to retailers:—

"The Grocer"—the original trade paper, established in 1861—is published every Saturday morning. It contains the fullest reports on all the markets, including prices and quotations up to the close of Friday's markets. Full reports of the trade meetings, legal cases, bankruptcies, etc., are given each week; whilst in its columns is always found the best of information and advice. Its advertisement pages are weekly catalogues of all the best and newest goods on the market. The annual subscription, 20/- post free, includes a free copy of "The Grocer Diary," which, with its mass of useful information, is a necessary compendium for every grocer.

"The Grocers' Gazette and Provision Trades News."—Offices: 15 Philpot Lane, London, E.C., and 44 Grocery Exchange, Manchester. Published every Saturday, price 1d. Annual subscription, 6/6. Contains the latest market reports, legal, gazette and failure intelligence, deeds of arrangement, association and other trade meetings, and reports from all parts of the kingdom. Circulates throughout England, Scotland, and Ireland, and abroad.

"The Grocers' Journal."—Popular organ of the trade. Estd. 1875. Circulates all over England, Ireland, Scotland, and Wales. Over 2,000 new subscribers added during last two years. It gives the latest market reports and prices, law cases, trade gossip, notes on novelties, and fuller reports of association meetings than any other penny organ of the trade, and it is *the best medium for advertisers wishing to address retailers*. Every Saturday, 1d. Write for specimen copy and opinions of advertisers. W. Redmaine, Publisher, 29 Rood Lane, London, E.C.

"The Grocers' Monthly and Provision Trades' Reporter."—An illustrated technical organ of the grocery and allied trades. 5/- per annum. This journal is now in its sixth volume. It is published on the 1st of every month, with a special number in the middle of July, containing a verbatim and illustrated report of the Grocers' Federation meetings, and another special number in October, immediately following the Grocers' Exhibition. A Year Book and Diary is published in December. The subscription price (5/-) includes the four-

teen numbers and the Diary. While the monthly gives a synopsis of the news of the month, it also includes many articles of permanent interest. It is smartly edited, admirably illustrated, and well printed on good paper. Publishers: Maclaren & Sons, 37 and 38 Shoe Lane, London, E.C.

"THE GROCERS' REVIEW AND PROVISION TRADE JOURNAL."—Published every Tuesday. 1d., or 6/6 a year, post free. Offices: Corporation Street, Manchester. "The Review" gives the most reliable market reports, lists of failures, creditors, associations' meetings, imports, Parliamentary matters, Stock Exchange quotations, and all useful trade information. Special articles on important trade topics, illustrated sketches of business firms, illustrated articles on associations, legal contributions, etc., are specially written for "The Review." It also answers legal queries from subscribers free of charge, and its weekly numbers will be found well worth retaining.

"GROCERY." — A well-illustrated monthly trade journal, published by Messrs. Heywood & Co., Limited, 150 Holborn, London, E.C. The aim of the proprietors of "Grocery" is to provide a monthly magazine beautifully printed on art paper, with high-class illustrations and interesting articles, which will, at the same time, be of practical use to the retailer in his business. The subscription is only 3/6 per annum (including postage).

"THE IRISH GROCER, DRUG, PROVISION, AND GENERAL TRADES' JOURNAL" (weekly, 1d.) is the only journal published in the direct interests of the Irish grocery and kindred trades, and is circulated throughout the whole of Ireland. It is the property of a limited company, comprising many of the leading merchants of the country, and exercises considerable influence in commercial circles. The publishing offices are at 10 Garfield Chambers, Belfast, and Mr. J. W. Gillmour, an Irish journalist of varied experience, is the editor-in-chief, under whose guidance the medium of the Irish trade is most successfully conducted.

"THE SCOTTISH TRADER" is the sole organ of the grocery trade in Scotland. It contains the latest news relating to the grocery and allied trades, articles on special subjects affecting the interests of grocers, and biographies of leading men in the Scottish trade. Head office: 123 Hope Street, Glasgow, with agents in Edinburgh and Aberdeen; also a London office at 18 New Bridge Street, E.C. It is published every Friday afternoon, and has a circulation embracing the whole of Scotland. Subscription, 8/- per annum, post free.

"THE CANADIAN GROCER" is the official organ of the grocery and provision trades in Canada. It is published weekly, simultaneously in Montreal and Toronto, and is the acknowledged authority on all trade matters. Those who wish to study Canadian markets, and keep in touch with buyers, should use this well-edited paper. Subscription, 12/-. Samples and full particulars, London office, 109 Fleet Street, E.C.

"LE PRIX COURANT."—The leading weekly for French Canadians, published by A. & H. Lionais, 25 St. Gabriel Street, Quebec.

"THE GROCERS' ASSISTANT." — An advocate of shop life reform. The official organ of the National Association of Grocers' Assistants. Edited by J. Aubrey Rees. Contains interesting trade articles, biographies of assistants, progress of reform, etc. Profusely illustrated. Published 1st of each month. Office: 137 Fenchurch Street, London, E.C.

"THE STOREKEEPER AND COMMERCIAL RECORD."—Published monthly, by J. Stanley Adams & Co., 93 York Street, Sydney, New South Wales.

"THE AMERICAN GROCER" (estd. 1869) is the leading grocery trade paper in America. Subscription rate to foreign countries, $4.56. Sample, two 1d. stamps. Write for particulars. 90, West Broadway, New York. Advocates pure foods.

"THE RETAIL GROCERS' ADVOCATE."—Edited by J. W. Callahan, and published weekly at 147 Chambers Street, New York.

"THE SPICE MILL."—A small but very interesting monthly. $1 a year. 542 Greenwich Street, New York.

"THE (NEW YORK) MERCHANTS'

REVIEW."—A weekly journal for retail grocers and general storekeepers. Editor, G. G. Small. $2 per year. Published every Friday, at 66 West Broadway, New York.

"THE NEW ENGLAND GROCER." — Issued every Friday by the New England Retail Grocers' Publishing Company, Boston, U.S.A. $2 per year. Dowse, editor. Devoted to the interests of the wholesale and retail grocers, general store merchants, bakers, confectioners, tobacco, fruit, produce, and provision dealers of New England.

"THE NEW ORLEANS TRADE INDEX."—Official weekly journal of the Wholesale Grocers' Association. $1 per annum. J. J. Lea, publisher and proprietor. 402 Board of Trade Building, New Orleans, U.S.A.

"THE KANSAS CITY GROCER." — Estd. 1884. Published semi-monthly in the interests of the retailers of the great south-west. $1 per annum; foreign, $1.25c. Frazer Printing Company, 219 Main Street, Kansas City, Mo., U.S.A.

"THE GROCERS' REVIEW." — Published 20th of each month, by the Review Publishing Company, St. Louis Avenue and Santa Fé Street, Kansas City, Mo., U.S.A. $1 per annum; foreign, $1.25c.

"THE (PHILADELPHIA) GROCERY WORLD."—Published weekly, at 927 Arch Street, Philadelphia, Pa., U.S.A. $2.00 per year; foreign, $3.50. Guaranteed largest circulation among the independent grocery trade papers of the United States.

"THE GROCERS' REVIEW." — Published monthly, by the Retail Grocers' Association, 14 South Tenth Street, Philadelphia. Editors: W. Smedley and M. N. Pennepacker. Subscription price, 50c. per year.

"THE OHIO MERCHANT."—A unique and independent medium for merchants, manufacturers, and salesmen. $2 per year. Published every Monday at 186 Seneca Street, Cleveland, Ohio. W. E. Godfrey, editor.

"THE ST. LOUIS GROCER AND GENERAL MERCHANT."—Weekly. $1 per year, or $1.50 to foreign countries. L. S. Taylor, president and business manager, St. Louis, Mo., U.S.A. The oldest grocery paper in the West U.S., being established 24 years.

"THE INTERSTATE GROCER."—Published every Saturday, by the Grocers' Journal Company, St. Louis, U.S.A. $1 per year; foreign, $2.50. J. A. Lee, editor.

"THE (CHICAGO) GROCERS' CRITERION."—Every Monday. Office: 34 Wabash Avenue, Chicago, U.S.A. The old, reliable trade paper of the Middle West. Estd. 1873, and largely used by American advertisers. Seems a very interesting paper, with 11,000 regular subscribers.

"THE MODERN GROCER."—Weekly. $2 a year. Office: 42 River Street, Chicago, U.S.A. The only grocers' weekly in America giving illustrated articles on window-dressing, store interiors, retail grocers' advertising, and ticket or show-card writing.

"THE GROCER AND COUNTRY MERCHANT (AND TOBACCONIST)." — Estd. 1874. $2.50 per year. J. J. Menzies, publisher. Office: 109 California Street, San Francisco. Its circulation among the wholesale and retail grocers of this city and the Pacific coast is larger than that of all other trade papers combined.

"THE (SAN FRANCISCO) RETAIL GROCER."—Every Saturday. $2 a year. J. K. Taylor, editor. Office: 214 California Street, San Francisco. Official publication of the Retail Grocers' Protective Union and the San Francisco Protective Association.

"THE SAN FRANCISCO TRADE JOURNAL."—A 16-page weekly paper, devoted to the interests of the grocer, general merchant, packer, manufacturer, canner, commission and produce dealer. Has a wide circulation in the Pacific States, British Columbia, the Orient, and the Pacific Islands. Subscription, $2.00 a year; foreign, $2.50 a year. J. R. Farish, proprietor. 221 Front Street, San Francisco, California.

"THE TRADE REGISTER" (Salmon News and General Grocery). — Published every Saturday. $3 a year. Editor and proprietor, L. M. Wood; associate editor, F. Leather. Offices: 19 Colman Block, First Avenue, Seattle, Washington, U.S.A.

"THE MILLER" is the special and

original organ of the milling trade. Published every Monday evening, at the office, 24 Mark Lane, London. Post free, 12/6 a year. Estd. 1875. The best paper now published for advertisements relating to the corn and flour trades at home and abroad; also gives the very latest home and foreign market reports and quotations, as well as the weekly review of the grain and flour trades. Illustrations and descriptions of all new inventions of interest to millers, and special articles on the technics of milling, etc., are contributed by the leading experts on these subjects.

"THE BRITISH BAKER." — Every Friday, 1d. Offices: 37 and 38 Shoe Lane, London, E.C. Largest and most comprehensive journal published in connection with the baking and confectionery trades. News, first-class technical matter, illustrated sketches, reviews, exhibition notices, and bankruptcy information. Market reports supplied by special and eminent writers on Mark Lane and provincial markets. Advertisements for situations vacant and wanted, articles of exchange, businesses for sale, etc. It circulates generally throughout the United Kingdom, and also has a very extensive circulation in the colonies and abroad. Subscription, 6/- per annum; foreign, 10/6.

"THE MASTER BAKER, LIMITED."—1 Eliot Hill, Lewisham, London, S.E. 4/- yearly, post free; specimen copy, 6d. Contains special articles, recipes, etc., by all the best trade writers, and news concerning bakers from all parts of the country. Insurances, £500 accident; also fire and life insurance free, and free small advertisements for all subscribers.

"BAKER AND CONFECTIONER." — Published on Friday evening. Annual subscription, 6/-, or may be had from newsagents; price 1d. This journal has by far the largest circulation of any in the trade. An accountant's certificate is given showing the exact figures. It contains full reports of the most important trade meetings, while its recipes, technical articles, and market reports are of the greatest value to all bakers and confectioners. Office: 61 and 62 Chancery Lane, London, W.C.

"THE PRACTICAL CONFECTIONER AND BAKER, PASTRY COOK, AND RESTAURATEUR." — Devoted to the sugar boiling and baking industries. Established 1882. Published 15th of each month. Post free, 3/- per annum, or 4/- foreign and colonial. Office: 55 and 56 Chancery Lane, London, W.C.

"THE CONFECTIONERS' UNION." — Oldest sugar confectionery journal in this country, and recognised organ of the manufacturing and wholesale trades. It prides itself upon the exclusive information it is enabled to impart to the industry it represents; and that this enterprise is reciprocated is evident from the number of confectionery houses supporting its advertising pages. Artistically got up, teems with exclusive items of news, and contains recipes for high-class goods. Published monthly. 5/- a year, which also entitles the subscriber to a free copy of the "Confectioners' Handbook" and one or two special numbers every year. Free specimen copy to anyone who is interested in the trade. Heywood & Co., Limited, 150 High Holborn, London, E.C.

"CONFECTIONERY."—A leading and favourite journal amongst manufacturing confectioners and preserve makers. It is the only journal which circulates in the trade which is exclusively devoted to sugar-boiling, jam-making, and chocolate manufacturing. Lengthy market and trade reports, handsome illustrated notices of novelties, full bankruptcy information, and technical articles of great worth. Its contents each month range over every branch of the trade. It is published at 37 and 38 Shoe Lane, London, E.C. Annual subscription, 3/6.

"THE INTERNATIONAL SUGAR JOURNAL."—Circulates among sugar producers, refiners, and sugar chemists, merchants, and brokers in every part of the world where sugar is made or sold in bulk. Founded as "The Sugar Cane" in 1869, it adopted its present title in 1899, in order to take in beet and maple sugars and glucoses of every kind. It is the oldest sugar publication

in the English language, is strictly non-political, and has enjoyed uninterrupted prosperity. Published monthly, in magazine form, by J. Roberts & Sons, Salford, Manchester.

"THE CONFECTIONERS AND BAKERS' GAZETTE."—Published in New York. 10/- a year, post free. Recognised as the leading news distributor and advertising medium of the confectionery and baking trades in America. Established 20 years. Write for sample copy. Office: 127 Worth Street, New York, U.S.A.

"THE BRITISH AND COLONIAL MINERAL WATER TRADE JOURNAL."—Published 17th of each month, and controlled by the National Union of Mineral Water Manufacturers' Association. The associations affiliated to the National Society now extend to nearly every part of the British Isles, including the Isle of Man and the Channel Islands. The societies subscribe *en bloc* for all their members. A copy of the "Journal" is, therefore, sent monthly (gratis and post free) to every member of every association in the kingdom, and to a large number of subscribers both in the British Isles and on the Continent. Annual subscription (post free): 5/- British Isles; 6/- colonies. Address W. Tooke, secretary, 15 Calls, Leeds.

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"THE (PACIFIC COAST) FRUIT WORLD."—Every Saturday. 2d., post free. Offices: 221 Front Street, San Francisco, and 218 Stimson Block, Los Angeles, California. A very useful and interesting paper for all engaged in the fruit line, not only in California, but wherever English is read, and fresh or canned fruits used.

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These partially soluble gums are obtained from various species of *Astragalus*, or low, spiny bushes known as goat-thorn, grown in Crete, Asia, Turkey, Persia, Greece, etc.

The shrub is very abundant in the districts of Yozgat, Iskilip, Cesarea, Kaledjk, and Angora, growing wild in the fields, roadsides, and hills. Animals avoid it on account of its prickly nature, but it is commonly used by the natives as fuel.

The native peasants, however, make very little effort to collect the gum, this being done by men specially sent from other parts.

The gum is not simply the juice of the plant hardened by exposure, but a more or less complete transformation of the cells of the pith and medullary rays of the stem into a mucilaginous mass.

These gums reach England mostly from Persia and Asia Minor, and are really a sort of white pith, which is squeezed out of the centre of the stems. They are white, lustreless, and flaky, without taste or smell, and will absorb about fifty times their own weight of water, merely swelling out and softening without dissolving entirely.

The principal market is that of Burudjird, to which place the best qualities are carried from distant parts of Persia. Second and third qualities of this gum are plentiful in the Bakhtiari mountains, where they are mostly bought up by Persian merchants and forwarded to Kermanshah. Gum Tragacanth is largely employed in stiffening fabrics where absence of gloss is important, but the demand for it seems to be falling off.

It should be chosen in long twisted pieces, ribbons, very clear and white, and free from all other colours. The brown and black pieces should be wholly rejected.

Hog Tragacanth, also known as *Caramania* or *Bassora Gum*, is an inferior sort from *A. prunus* or *Amygdalus*, and contains only about 1 per cent. of soluble gum.

Train Oil.—Da. and Sw. *Tran;* Du. *Thraan;* F. *Dégras, Huile de poisson;* Ger. *Gerberfett, Thran;* It. *Grassi per conciator, Olio di pesce;* Port. *Azeite de peixe;* Rus. *Salo worwannoe;* Sp. *Grasa para curtidos;* W. *Olew'r morfil.*

A general name for different kinds of fish oil, such as whale, seal, cod, pilchard oil, etc.

This oil is drained from the blubber of the common baleen, or Greenland whale, and the word *train* is probably a corruption of *drain*. It varies in colour from honey-yellow to dark brown, according to the character of the blubber and method of trying-out. It has a very strong, coarse smell, and is principally used for lamps, machinery, greasing harness, and making soft soap. Train oil is called *pressed oil* after all the whale tallow has been taken out of it.

Transparent Soaps. — These are very pleasing to the eye, but do not possess the active detergent powers of ordinary mottled, streaked, or tinted soaps.

They are made by dissolving either white or yellow dried soap—or soda and kidney fat, dried—in warm methylated spirit; a little glycerine is added, and it is allowed to stand awhile; the clear portion is then removed, filtered, and evaporated in moulds. The aromatic and colouring ingredients are added while it is soft.

Transparent soaps do not lather well, and require drying several weeks before they are ready for sale. They should not contain more than 10 or 12 per cent. of water, and if the soap looks opaque there is too much spirit left in; if soft, too little.

In fixing names on, the letters to be printed are typed or lithographed on a very thin band of gelatine, which is gummed on to the transparent soap. Fresh soap at a temperature of from 58° to 67° C. is then poured on the top, and the gelatine band with its characters is thus securely fixed in the inside of the soap. Many of these soaps, made by the cold process, are half sugar and water.

Transparent Wax Candles.— See *Spermaceti Candles*.

Trapa Nuts.—See *Water Nuts*.

Trappistine.—A celebrated liqueur distilled by the "Fathers of the Grace of God" at the Abbey "La Grace Dieu," in the Doubs, France. It is made in both yellow and green colours according to strength. A similar compound is also made by the Trappists of the Quattro Fontane, in the Roman Campagna. This latter is a febrifuge largely extracted from the eucalyptus.

Treacle.—F. *Mélasse*; Ger. *Theriak*; Port. and Sp. *Jarabe*; W. *Triagl*. (See also *Golden Syrup* and *Molasses*.)

Treacle, or "Triacle," as it used to be spelt, is an old word for "balm," or "healing" (see Chaucer's "Man of Lawe's Tale"). It consists of the brown, viscid, uncrystallisable syrup or *spume* of sugar generated by heat during the refining process, and finally drained from the refined moist sugar. It usually has the specific gravity of 1·46, and contains about 75 per cent. of solid substances.

The common adulterant is excess of water. Treacle is much darker in colour and thicker than golden syrup; also stronger in sweetening properties.

It is more laxative than sugar, always contains more or less free acid, but should be free from empyreumatic odour or flavour.

German Treacle is a name also given to an evaporated infusion or decoction of juniper berries. It is sweet-tasted, aromatic, and diuretic.

The name of treacle is often wrongly given to *molasses*, which latter is merely the drainings of crude unrefined sugar.

Treacle is sold in puncheons of about 12 cwts., half-puncheons of 6 to 8 cwts., and barrels of about 3 cwts.

In hot weather the casks are apt to shrink and leak, but this may be remedied by tightening the hoops, or by washing and laying wet sacks over the casks occasionally.

Apply to Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool; the Pure Cane Sugar Company (J. Philip & Co., agents), 4 Fenchurch Buildings, London, E.C.

Treacle Beer. — Common receipt: 6lbs. treacle, 10 ozs. hops, 18 gallons water, ½ oz. bruised ginger, and 8 ozs. yeast. Boil the water and hops one hour, then add the treacle; mix, strain,

nd ferment with the yeast. When the ermentation is finished, either bottle or eep in cask.

Treacle Parkins. — Small, round akes or biscuits of dark brown colour, bout ¾ inch thick and 3 inches in liameter. Made of coarse oatmeal, reacle, butter or lard, ground ginger, nilk, and flavouring. In the North of England these parkins are very popular for eating on 5th November during bonfire displays.

Trebizonde Nuts. — See *Turkey Nuts.*

Trepang. — F. *Cornichon-de-mer*, or *Bêche-de-mer.*

A favourite Chinese dish. It is simply a gigantic sea-slug, of the family *Holothuria*, and is often called *Sea cucumber*, but resembles an immense leech, having also the capability of extending itself a couple of feet.

Although not a pleasant creature to look at, the Chinese deem it nearly worth its weight in gold, and maintain it is of exquisite flavour; also exceedingly nutritious, not unlike cooked lobster. A considerable business used to be carried on in certain Eastern countries catching, drying, and smoking these fish, especially in Madagascar, where, it is said, some 200 vessels were engaged in the industry.

"*Bêche-de-mer*" soup is put up and sold in some of the shops.

Tres Fin, or Fins.—French words, meaning *very fine*, or *small.*

"Triage" is a name given to broken and damaged berries, which, though not of so good an appearance, may be almost equal in quality to the bulk from which they came. (See *Coffee.*)

Trichiniasis.—See *Pork, Bacon, and Pigs.*

Tripe.—F. *Gras-double*; G. *Kuteln, Gedarm*; Port. *Tripas*; Sp. *Callos*; W. *Tripa, penyg.*

The stomach of the ox or cow, cleaned and par-boiled for human food; or rather the cardiac portions of the stomach known as the *rumen*, or paunch, and the *reticulum*, or honeycomb.

The mucous membrane of the rumen is raised in a vast number of close set papillæ, while that of the reticulum is thrown into multitudinous crossed folds, enclosing many polygonal cells. Tripe is prepared by first well cleaning the organs, while fresh, in warm water and soda, and then gently boiling them in clean water till white and tender. Afterwards, it is skinned, and the tripe may be cooked in a great many ways into very dainty food, except when very fat.

Being easily digested, tripe is well adapted to the sick and weakly, but for invalids it should be deprived of nearly all the fat it contains. It is generally of good quality, but may be the subject of inflammation, and this is usually indicated by its dark colour. Fatty tripe is only fit for the strong and healthy. It may be kept good a few days in salt and water, with a little bisulphite of lime.

Pickled Tripe.—In America the tripe is usually parboiled, but in some other places only washed in cold water, before sent to market. The best plan is to cure it by first cooking, then pickling in hot vinegar and spices, and finally sealing up in unglazed earthenware jars.

Tripes à la mode de Caen are noted all over France. They are prepared with carrots, spices, etc., and usually sold in tins.

Tripoli, or Tripoli Powder.—F. *Tripoli, Terre pourrie.* (See also *Rotten-stone.*)

A peculiar mealy form of silica, as noticed in Bath brick. It got its name from having been originally found at Tripoli, a Turkish vilayet on the North of Africa. It really consists of the remains of very minute cast shells, skeletons, and other microscopic organisms. It is grey, red, white, or yellow in colour, and is extensively used, first with oil, and lastly dry, to polish the softer metals, gold, silver, etc.

The polishing powder from Bilin, in Bohemia, the *Bergmehl* of Sweden and America, and the French *Tellurine* are all very similar.

Apply to C. Windschuegl, 1 Leadenhall Street, London, E.C.

Tropon.—An artificial food mixture made at Mülheim, in Rhenish Prussia, and consists of ⅓ animal and 2-3 vegetable albumen.

Trotters, Cowheel, etc.—F. *Pieds de Mouton;* G. *Hammel-Füsse;* Sp. *Pezunas;* W. *Troedyn.*

The feet of sheep, pigs, or oxen, containing as they do much gristle and gelatinous matter, make wholesome dishes when cooked slowly so as to render them digestible, but they are not very nutritious. Besides, they are usually overdone, and part of their alimentary properties has been transferred to the water in which they were boiled.

American *pigs' feet* in barrels may be bought at 12/- to 14/- per cwt.; the small feet are the best. At most triperies they are served plain boiled, and eaten with oil and vinegar. American *pigs' hodges* are also to be had at about same rate, and sell well when nicely cooked.

Truckle Cheese.—A provincial term for any small, flat-shaped cheese that may be run on its edge.

Truffles.—Du. *Truffel;* F. *Truffes;* Ger. *Trüffeln;* It. *Tartufos;* Port. *Trufas;* Sp. *Criadillas de Tierra;* S. *Tryffel;* W. *Math a glor.*

The word truffle is from the Latin *tuber* (signifying a swelling).

Truffles are all edible fungi, and have been called underground mushrooms, parasitic excrescences of certain trees through the bites of insects; also vegetable tubers. They possess an animal rather than a vegetable flavour, but it has not yet been settled what truffles really are.

They seem to share the capricious nature of the mushroom in regard to cultivation, and are seldom found twice in the same place. A piece of ground that may yield a great quantity one year may be quite fruitless the next. They are, however, mostly found in loose soil about a foot deep, under or near old oak, beech, or walnut trees, and are of irregular size, round shape, and dark brown colour outside, while the insides may be brown, grey, or white.

There are many kinds, but only two come to market—the winter and summer truffles (fresh and in perfection in January), the former being black, and the latter being greyish white.

Those from the South of France are the most highly prized, but truffles are also fairly abundant in Italy, Spain, and Holland. Even in England a species by name *Tuber æstivum*, is to be found during summer in Kent, Wilts, and Hants, chiefly in beechwoods on calcareous or chalky soils, but its quality is so inferior that no special search is made for it.

Truffles have also been discovered quite recently in County Galway, and the peasantry are promised good times. That, of course, all depends upon the kind of truffles, for there are almost as many varieties of what a French wit has called the "diamant de la cuisine" as there are of eggs.

There are three species of truffles found in France—the *black*, the *white* and the *red*, or "*truffe à l'ail*," the latter having a flavour of garlic. They are found in all soils, but mostly in oak forests, or where the earth is damp, gravelly, and calcareous, thriving best in sterile soil.

The black, or *winter*, truffles are the most esteemed, the most famous being those found in the shallow soil that covers the limestone hills of Quercy, in Charente, in the environs of Perigueux and Angoulème, and known as the variety *T. melanosporum*, with wrinkled skins and strong flavour. Indeed, the district of Périgord has long enjoyed a world-wide celebrity on account of the delicious strawberry-like flavour of its truffles. "*Pâtes aux Truffes d'Angoulême*" are very highly prized, and are often sent as presents to very distant places.

Similar sorts are also found in the districts or "*truffières*" of Gard, Isère, Drôme, Ardèche, Herault, Tarn, Vaucluse, Lozere, and Jura.

The difference between truffles from Périgord and those from the neighbourhood of Carpentras (Vaucluse) is that the former are naturally *black* inside as well as out, while the latter are only artificially coloured black outside, and are easily detected on cutting them.

TRUFFLES—(continued).

The light coloured summer truffle is found as far north as Paris, and is gathered in tolerable quantities in Burgundy and Champagne.

Drôme truffles, especially firm and agreeable in taste, are remarkable for their regularity in shape and size; also for the whitish veins or streaks they possess.

Those of Gard are more spongy, and have an odour of musk which to some people is objectionable. The nature of the soil seems to affect the flavour of the product very much; the truffles of Burgundy have generally the flavour of resin, and those of Naples a smell of sulphur.

In Algeria and the North of Africa they find in the sands a round, smooth, and glossy kind, quite white inside and out. This delicate species is said to be of great antiquity, and to be the kind which figured in the Roman and Punic feasts.

In appearance the ordinary truffle is about the size of a walnut, with a rough brown warty surface closely akin to the potato, which it likewise resembles in consistency, though not in colour; but, as above stated, there are numerous varieties in size, form, colour, and flavour, and in weight they may vary from a fraction of an ounce to 50 or 60 lbs. each.

They seem to grow in clusters, without roots, 5 or 6 inches below the surface of the earth; and, not yielding to cultivation, they must be sought for in chance places, from November to March.

In some parts of Italy the domestic pig is commonly driven out to the woods with a cord attached to the hind leg, and the holder of it observes where he begins to root; indeed, if not sharply watched, the animal devours the prize before he can be stopped. In some districts the truffle is called *swine-bread*, from being so keenly relished by these fine-nosed animals.

It has also been observed that previous to a thunderstorm, when the air is loaded with moisture, the odour is most perceptible, and hence this subterraneous delicacy has also the name of *thunder-root*.

The pig, however, is not very tractable, and recently it has been found that poodles can be trained to perform the duties that are instinctive to the pig; and so great is the demand in France for the truffle that many of the canine species are now, in certain districts, possessed of this estimable talent. Finely cut or sliced truffles are mixed daily with their food, until at length they develop a liking for the flavour, and afterwards their owners conceal in some portion of the *truffière* or field where truffles are supposed to exist, a little tin dish of "*filet aux truffes*," covering the same with a few handfuls of earth. The dog is then brought out and urged to hunt for the dish, goaded by an empty stomach. When he at length finds it he is caressed by his master, and thus, in the space of a few weeks, he readily learns to hunt for the vegetable itself.

Alexander Bornholz, a German scientist, has claimed to have transplanted and grown the truffle; so have the Count de Noa, M. Rousseau, and other *savants*, made like claims, but they have in each case proved but failures.

However, the very fact that the truffle is very valuable, and that it grows only in certain districts, has been enough to render it an object to be sought after very eagerly, and even clandestinely, by peasants or those who carry them to market. There are poachers for truffles as well as for game, who hunt by night with their dog or pig, a plague to landowners and a *bête noire* to local gendarmes.

Scarcely is there a preserving establishment in France at this moment that does not, among other alimentary products, preserve also truffles—particularly at Bordeaux and Marseilles, and, of course, there are several special factories in Périgueux and Angoulême.

The truffle appears to have become as indispensable to the dinner table of the "noblesse" as the aromatic sprig of garlic to the frugal repast of the peasant. They are chiefly used in sauces, soups, and as stuffing for poultry.

The annual production in France

alone is valued at £600,000. Périgord itself yields about 150 tons yearly, worth £1,000 per ton, but about 90 per cent. of these are consumed in France. The ordinary article is sold in the departments where found at about 5/- per lb., but at about double that price in the principal markets of the larger cities, and choice qualities often fetch a guinea per lb. in the Paris markets. In England French preserved truffles sell at about 16/- per lb., but more if of the finest Perigord variety.

The preserving process adopted in Bordeaux is a very simple one—the truffles being partially boiled, as tomatoes, asparagus, and certain other vegetables, and then sealed up in jars, tins, or bottles, in their own diluted juice. Truffles should be light according to their size, elastic when pressed, and of agreeable aroma. When dried, or exposed to the air long, much of their flavour is lost. In fact, the fresh truffle is so immeasurably superior in flavour and aroma to the best of the preserved brands as to suggest whether it is not mere fashion or the association of memory which calls for the latter.

All meat and game may be "truffled," the vegetable being cut into small squares and inserted into the substance of the article preserved.

In Tunis the species met with is known as *terfez* (*Terfesia caveryi*), and, like those of Tripoli, Algeria, and Arabia, they are light-coloured inside and out, smooth, and glossy, and, although without much taste or smell, consumed daily. They are found in large quantities, and are much lower-priced than the renowned Périgord truffles; but, of course, if they possessed the aroma and taste of these latter, they could only be eaten now and then.

Truffles are seldom eaten alone, but are used in soups, gravies, ragouts, and other highly-seasoned savoury dishes.

The legendary reputation of the truffle is, doubtless, to a great extent imaginary, but it is an acknowledged stimulant to the digestive organs.

Tuba. — A mild alcoholic drink, appreciated by the natives of the Philippines, and obtained by tapping the blossom stalk of the coker-nut palm.

Tucupi and Arube Sauce.—Tucupi is a kind made from Mandioca juice by boiling the liquid with pepper after the starch has been separated. It is kept several weeks in stone bottles before using. *Arubé* is also made from the poisonous juice of the Mandioca root, boiled down before the starch is precipitated and seasoned with capsicums. (See *Cassareepa* and *Mandioca*.)

Tung, or Chinese Wood Oil.—Jap. *Doucoua*.

This is a glyceride oil of a golden-yellow colour, clear and viscous, with the odour of a seed oil resembling linseed. Specific gravity at 60° F., 0·9405 (water at 60° F.), and gives on saponification 96½ per cent. of fatty acids.

It is obtained from the fruit of the Chinese oil tree, *Aleurites cordata*, a species very common in China, and known there as the "tung." Oil is derived from several varieties of these trees, but it is the "ying tzu tung" which is specially cultivated for this purpose. It is found chiefly in Hunan Hupeh and Szechuen. It abounds on the banks of the Yangtze, west of Ichang, and grows about 15 feet high, with beautiful green leaves and small pink-white flowers, and bears large green fruit like the apple, which is gathered in August and September. The seeds are large and poisonous, but it is from them that the oil is expressed in rude wooden presses with wedges. It it sent to market in tubs with tight-fitting lids, and much of it is exported from Hankow, Kinkiang, and Canton to other parts of China. It is used in making linoleum, in paints and varnishes, also for lighting, but mostly for calking and painting boats. In applying it to the bottom of the boats it is put on hot. It gives a clear, glossy appearance, but is often adulterated with cotton-seed oil.

Tungstate of Sodium.—According to Cooley, this is a salt used for rendering linen, cotton, and other fabrics un-

nflammable, also used as a substitute or *stannate of sodium* as a mordant in lyeing. (See also *Ammonia.*)

It may be prepared by adding 9 parts f finely powdered tungsten to 8 parts f fused carbonate of soda, and continuing the heat for some time. On oiling the cooled and pulverised mass vith water, evaporating the filtrate to lryness, and treating the residue with ukewarm water, the salt dissolves out.

Muslin steeped in a 20 per cent. solution of this tungstate of sodium is perfectly uninflammable when dry, and the saline film left upon its surface is so smooth that the muslin may be ironed without difficulty.

Several theatres and other public institutions in America apply it to the woodwork as a safeguard against fire.

Tun-Hoof, or Ale-Hoof. — The leaves of *Nepeta glechoma*, from which is prepared a tea, held in great repute by the poor in some districts.

Tunisian Wines.—Pliny, in his "Natural History," praises the wine grown in the Tripolitaine as among the best reputed in the Roman Empire. There are now in Tunis about 18,000 acres of vineyards devoted to wine-making. The wine is chiefly good, and the alcohol in them varies from 8° to 13°. The red kinds do not suffer much from transport, but the most delicious wine of the country—the *white muscat*, very sweet and of delicious flavour—will not stand being kept long, or being exported without turning into vinegar.

There are five varieties of grapes grown, apart from those introduced from America. The most esteemed is the "Asli," a round, white grape, with fine skin, and very rich in sugar. There are also two other white and yellow-white grapes, with slightly wrinkled skins. One of the two black varieties is like the Black Hambro', and the other is a small grape of deep red colour. The best grapes are grown about Sfax, and there is no appearance of phylloxera in the country.

Tunny Fish, or Tarantello. — F. *Thon;* G. *Thunfisch;* It. *Tonno;* Port. *Athon;* Sp. *Aton.*

These fish (*Thynnus vulgaris*), although of the same family as mackerel, and rather like that fish in general appearance, are much larger, rounder, and with shorter snouts. They are high sea fish, very numerous in the Mediterranean, often 7 to 10 feet long, and weighing 400 to 1,000 lbs. They are caught in a series of nets, being driven from one to another till they reach a very strong one.

The flesh is firm, and is either cooked fresh or preserved in salt, or tinned in oil, but it is very indigestible, and has been described as "neither fish, flesh, nor fowl, nor even good red herring." When salted it is called *Tarantello.*

It is, however, very popular in France and Italy for making into soups and pies. In America the fish is known as *Albicore* or *Horse mackerel.*

Turbot. — F. and Sp. *Turbot;* G. *Steinbutte;* Port. *Rudevalo.*

A flat fish of the genus *Rhombus*, with a body almost circular. By epicures it is the most esteemed of all flat fish; should be thick and firm, and the flesh yellowish white. It is rounder in shape and much larger than the plaice, and its spots are smaller and more numerous.

Cut-up halibut is often sold as turbot, especially in Scotland, though the smooth upper surface of the turbot is quite different from the tubercle-covered surface of the halibut. Sometimes these fish grow to a weight of 20 to 30 lbs., but they usually run 5 to 10 lbs. They are caught off the coasts of Devonshire, Durham, and Yorkshire, but are chiefly netted by Dutch and French fishermen and sold to the English. As a rule, they are either taken in trawl nets with other flat fish off the English and Dutch coasts and Flemish banks, or, when the weather has driven the fish into deep water, they are fished for with many-hooked lines.

Turkey Nuts. — These nuts (*Corylus colurna*) are usually imported from Smyrna, and classified into three categories—round, oblong, and almond-shaped, the latter being the dearest because of their scarcity. All Turkey

nuts exported are previously placed in a sulphur bath, which gives them the fine clear colour expected in Europe. They are a species distinct from hazel or *Barcelona nuts*.

The chief centres of production are Kerassunde, Trebizonde, Tireboli, Layistan, and Elegus.

Turkey Rhubarb.—A name given to the roots of a valuable Chinese variety grown in the Tartar districts. It is not grown in Turkey, and we really get no rhubarb from there. (See *Rhubarb*.)

Turkeys.—F. *Dindons;* G. *Truthahnen;* Port. *Perus.* (See also *Poultry trade*.)

The common turkey is a native of North America, and was introduced thence into England in the time of Henry VIII. They are considered the most difficult to rear of any fowls we have, and yet in their wild state they abound in Canada and the northern United States, where the climate is very severe.

Where they all come from at Christmas is surprising, as in going through any of the large towns and looking at the shops the turkeys are displayed in dozens, scores, and, in some cases, hundreds. They make a fine display. They are generally hung up head downwards. The feathers are nearly all removed from them, but a few small ones are left at the tip of the wings and on the ribs. This helps to display the breast more, and the legs are always clean. In weight they vary more than any class of poultry put in the market, and run all the way from 7lbs. up to 30lbs. The light weights are bought to suit very small families. The best-class demand is for medium-sized ones, and the very large are generally bought for hotels, clubs, and as presents, as in the latter form some think they can never send too large a bird. A 7lb. turkey is not a very attractive bird, and it seems a pity to breed or kill such a poorly-matured specimen. One 10lbs. or 12lbs. is much better, and attempts should be made to have them this size at least. The best turkeys always come from farms where the soil is dry, dampness being much against their progress when young. As a rule, it is to the farmers' wives or daughters that the full credit of rearing the turkeys must be given. The poulterers usually secure them at 6d. or 7d. per lb. The finest-fleshed turkeys are those that have been fed a good deal on meal and milk. In killing them they are much more white and nice-looking if they are destroyed by cutting the roof of their mouth and allowing them to bleed to death than to draw or disjoint their necks, when they are very apt to be discoloured.

Only young, plump, well-fed birds are wanted, and they should not be shipped in the feathers. They should be thoroughly starved before killing, carefully and neatly plucked, and hung by the feet, so as to drain all blood from the body, leaving the flesh white.

The birds also should be thoroughly chilled before packing, and carefully graded, six in an airy case.

France has long sent a large number, especially from Normandy.

Considerable numbers of Canadian turkeys are now killed and sent in the feather to England every winter a few days before Christmas for sale to dealers through the fruit brokers.

Since the days of the feudal barons when, at Yuletide, a whole ox was roasted on the hearth, roast beef and plum pudding have been associated with Christmas in the English mind. But the ox reigns not in the New World. When the Pilgrims settled in New England they found in the wooded district of Massachusetts a large, wild bird, difficult to catch, but well worth catching—namely, the turkey. This bird which grew in its wild state to even greater size than it reaches in domestication, abounded in all the New England States, and the delicacy of its flesh was such that it soon on most special occasions took the central position on the festive board.

As the country became better settled it was found that the wild turkey was a native of the New World from Canada to South America, and at one time Benjamin Franklin advocated its adoption as the emblematic bird of the United

TURKEYS—(continued).

ates. It was soon discovered that is, the largest of gallinaceous birds, as capable of domestication, and it as imported into Great Britain by abot, into Spain by early Spanish dis-overers from Mexico, and is now to be und in almost every civilised section the world.

The meat of the domesticated turkey not as rich as that of the wild bird, it it has few, if any, superiors among e birds or beasts at the disposal of neral humanity. For the Thanksgiv-g and Christmas dinner in Canada d the United States the turkey is ipreme. In Great Britain it has con-antly grown in favour, and the reign the ox is not likely to extend many ars into this century.

For years the farmers, or, rather, the rmers' wives, of Ontario have raised ocks of turkeys. They demand little are, foraging for themselves, eating sects, grasshoppers, seeds, nuts, etc., early all season.

The principal points in Canada for rkeys are Perth, Smith's Falls, Wal-erton, Paisley, Elmwood, etc., where ey are to be had at 7 to 8 cents per ound. The chief port of shipment to ngland is St. John, N.B. A single ip has been known to carry £10,000 orth for Christmas trade. In the attle Market, Western Toronto, the irds are brought alive in cars, specially onstructed with tiers to carry about a ousand birds. From the cars they re driven into a pen on the second floor f the abattoir. There is no waiting for ightfall here. There is a grab, a kick, nd a struggle, and an expert breaks the eck of a turkey over a box, gives it a nal stretch, throws it into a truck, then rns to the next turkey, when the ope-ation is repeated. The turkeys are aken from here to a window, through hich they are passed, while yet warm, o the pluckers. In the plucking-room nen, women, and children are vieing ith each other to finish their birds rst. Time is money here. The luckers get 5c. apiece for every turkey hey finish properly, and consequently veryone is at high tension. The eriousness, however, is not unmixed with laughter, for the pluckers are of a practical joke-loving class. As the day wears on, feathers are everywhere. The 90 or more pluckers get through a lot of work. Consequently, they walk knee-deep in the mixture of coarse quill feathers and the soft, downy breast feathers. The lightness of the latter causes them to be borne here, there, everywhere; no one's clothes escapes, nor does the unvarnished woodwork of the plucking room.

When the plucker finishes his bird he takes it to one or another of the cold storage rooms. Here his work and the condition and weight of the bird is examined. When sure that his work has been "tabbed," the plucker goes off to get his next bird. If the bird that has been finished shows, on examination of its crop, that it has been starved the necessary twenty-four hours, it is hung face downwards on one of the many long rows of pegs in the cold storage room. Here it is left till thoroughly chilled. The method of packing is important, as on this depends largely the condition of the birds when they arrive in Britain. They are put in long cases, containing from eighteen to twenty-four birds, according to size. Between each is a piece of tissue paper, and on top of them a layer of straw. Over two thousand birds are handled by this system in a day, and all birds are packed according to size and condition, which is a requisite for trade with Great Britain.

"In some cases turkeys are killed and prepared for shipment in towns where there are no cold storage facilities, and on days when the weather is too warm to allow the animal heat to part from the birds' bodies before they are packed, with the result that the heat left in their bodies causes them to seriously deteriorate during the voyage. The result is not only to lessen the value of the birds so shipped, but to give a wrong impression of Canadian birds."

The *bronze* is the favourite variety, and fetches the highest prices on account of their large size, hardiness, and attractive plumage. Adult male birds of this type will average 30 to 40 lbs., and hens 14 to 20 lbs.

Turkeys are good layers, and the eggs hatch in twenty-eight days. They are very fond of nettle seed, but the seed of the foxglove poisons them.

A considerable trade is also done in *Tinned turkey*, as well as in *Potted turkey and tongue.*

Turkish Delight.—(Also known as *Rahat Lakhoum, Ratel-i-coum, Harem Delight, Lumps of Delight*, etc.)—A delicious Turkish sweetmeat mostly made at Constantinople, but also at Smyrna and other cities, from wheat starch dissolved in hot water, and generally flavoured with otto of rose, lemon, vanilla, mastic, or other scent, and of all sorts of colours and combinations.

A large amount is now made in the Island of Syra, where there are about a dozen factories, employing some 120 men. The British Consul says that the kinds made there, and flavoured with essence of pistachio, chocolate, and banana, are considered superior to any made at Constantinople or elsewhere in the Levant, owing chiefly to the superior virtues of the water of that island.

The term *Rahat Lakhoum* is of Turkish origin, and means *pleasant to the throat.* The article is usually formed into soft squares, cubes, or oblong cakes of various sizes, and powdered profusely with wheat starch and the best white sugar, ground to an impalpable powder and in equal quantities. These articles, popularly supposed by confiding young people to be purely Eastern delicacies, obtainable only from the *pâtisserie* of the Sultan's seraglio, and by great stratagem, are also often made in England; our climate, however, seems too damp, or the water unsuitable, for the article is apt to turn wet and clammy like damp salt. It cannot be made in this country to keep good long, even by natives of Turkey, who have been accustomed to make it at Constantinople.

It should be like a firm jelly, very bright, daintily coloured, sweet (not mawkish), scented, and delicately flavoured with vanilla, rose, almond, lemon, orange, clove, cinnamon, or musk. Sometimes green pistachios and whole sweet almonds are added, makin it a kind of nougat.

Turk's Head.—F. *Tête de loup.*

A hair broom in the shape of a roun knob or conical bush, for fixing on th end of a pole and removing cobwebs dust, etc., from the ceilings and uppe parts of the interior walls in dwellin houses.

Turmeric.—Da. *Spansk Saffran* Du. *Kurkuma*; F. *Curcuma*, or *Safra des Indes*; Ger. *Gelbwurz*; It. *Turtu maglio*; Port. and Sp. *Curcuma*; Ru *Zheltak*; Sw. *Gurkmeja.* (Also know as *Indian Saffron, Curcumen*, etc.)

It consists of the ground rhizome o root of the *Curcuma longa*, an Ea Indian plant of the same family a ginger. It is also grown in Zanziba China, and the Archipelago, both fo native consumption and for export. Th roots are long palmate tubers, distin guished respectively as round and lon turmeric; the round pieces, being th central rhizomes, are ovate, while th long, being the secondary or later tubers, are more cylindrical in form.

They vary in thickness from that of quill to about half an inch in diameter with joints or ring-like swellings a short intervals.

Outwardly their colour is a yellowish grey, but are of a deep orange colou inside, and darkest in the middle They are often badly worm-eaten, bu the odour and taste is aromatic, not un like common ginger, and more or les bitter; and when chewed it tinges th saliva yellow. The actual colourin matter ($CH_{10}O_3$) is called *Curcumin.*

Turmeric is insoluble in cold water and only partly soluble in boiling water but is quite soluble in alcohol, and form beautiful yellow crystals. It has bee extensively employed as a dye stuff fo silks and woollens, but the yellow colou it produces is very fugitive; yet tur meric is a condiment as well as a dye and when ground to an orange red powder is used as a stimulating season ing. It is the principal ingredient in Indian curries, and is the favourite colouring substance used in making mustard compounds, pudding spice

how-chow pickles, etc. Certain varnishes and ointments also owe their colour to this substance, but as a dye it is going out of use, and, in fact, the trade in turmeric is declining. The best is of light colour, with agreeable aroma, and freest from strong earthy smell. Prices vary considerably, but Madras usually fetches 28/- to 32/- per cwt.; Bengal, 24/- to 26/-; Pubna, 1/-; Dessi, 19/-; China "Finger," 2/- to 25/-. The chief adulterants in turmeric are yellow ochre and carbonate of soda.

In Africa it is prepared from the roots *Canna*, cultivated at Sierra Leone.

Special Importers.—C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Turnips.—F. *Navets;* Port. *Nabos.* The turnip *Brassica campestris* is the enlarged succulent root of a biennial cruciferous plant, very extensively cultivated in this country, and also grows wild. The Swede (*B.C.* var. *Suecica*) or *Rutabaga*, and the Rape (var. *Rapa*) are its distinct varietal forms. The Swedish, introduced in the 17th century, are a most valuable crop for sheep, and thrive best in the moist summers of our Northern counties, but often suffer severely from the turnip beetle. Turnips contain 92 per cent. of water and no starch or sugar, but a pungent essential oil.

Prairie Turnips.—The tubers of a kind of twining plant eaten as food in North America. Like other plants possessing a tap-root, turnips will not bear transplanting. Farmers are often complaining of the ravages of the "turnip fly," but if they would only soak the seed in turpentine about 12 hours before sowing they will have nothing to fear.

Half a gill of turpentine will suffice for 20lbs. of seed. The fly may perforate a leaf here and there, but that will not kill the plant. If you squeeze the young leaf of seed which has been dressed as above, you will notice the strong smell of turps, but this passes off when the plant gets into strong leaf.

Turnip Tops.—The tender green leaves and stems of the field turnip are often sold as a vegetable food, especially in London, where they are boiled and eaten as spinach, curly greens, etc.

Turpentine, or **Colophony.**—Da. and Sw. *Terpentin;* Du. *Terpentijn;* F. *Térébinthine, Perine-vierge;* G. *Fliessharz;* It. *Terebentina;* Pol. *Terpentyna;* Port. *Terebenthina;* Rus. *Skipidar;* Sp. *Trementina;* W. *Gwlyb, Ystawr.* (See also *Canada Balsam.*)

This liquid, often abbreviated to "turps," is obtained from the sap or juice of various firs and pines (principally *Pinus Palustris* and *P. tæda*), spruces, and other members of the great group *Coniferæ*, and also from one or two species of *Pistacia.*

Most of that used in England comes from the United States, particularly from the pine forests of North Carolina, where it is collected in large quantities by "tapping" the wild pitch pine trees and Scotch firs when thirty to forty years old, and upwards; the three chief species are the (1) *Pinus palustris*, or Georgia pitch pine, which grows in the dry and sandy soils of North Carolina; (2) *Pinus tæda*, the Frankincense or Loblolly pine, which thrives in both wet, clayey, and dry, sandy soils; (3) *Pinus cubensis*, or the Cuban pine, growing on the coast from South Carolina to Louisiana. The birch gum tree, *Bursera gummifera*, is commonly called Turpentine tree. North America altogether furnishes the bulk of the turpentines of commerce, that of France and Austria being hardly one-tenth of the world's production.

When the tree is first cut, the sap called "virgin dip," is a honey-like juice, nearly white in colour, but the next year the colour is darker and the product called "yellow dip"; the third year it is called "dip and scrape"; while the subsequent products are called "scrape," and on exposure assume the consistency of cheese. It is found, after careful tests, that this tapping of the trees is not injurious to the timber, and that the lumber is in no way affected by it.

The crude sap as above obtained is afterwards purified by setting it to liquefy in the heat of the sun, and the

barrels or baskets being perforated at the bottom, 5 to 25 per cent. of turpentine filters through. The solid substance left in the cask is the ordinary resin of commerce, and when about one-fourth of the spirit or oil has been distilled from the liquid, the remainder left in the retort is called "colophony."

In some countries the slimy gum, as collected from the trees, is taken to a distillery, placed in a large cauldron, and melted. Tepid water is run over the face of the resin till eventually large quantities of spirits of turpentine and water distil over, and finally, when allowed to stand a short time, the water settles, and the pure "oil" is separated.

Another method of obtaining turpentines is by sweating them out of sawdust and other mill refuse. Turpentine is often adulterated with kerosene, naphtha, benzoin, etc.

A few years ago its resin was very popular as a cancer cure, and sold at very high prices, but its reputation soon waned.

Chian, Chio, or *Cyprus Turpentine,* of thick consistence, greenish colour, but quite clear and transparent, and almost without taste or smell, is the juice of *Pistacia terebinthus,* the true turpentine tree of Spain and Southern France. This tree is a middling-sized evergreen, and has leaves like those of the bay. It is extremely resinous, and, unless the resin be discharged, the tree soon decays and dies; but a factitious kind is now very generally sold. It is made by melting 7lbs. black resin, and stirring in 7lbs. Canada balsam; some add a few drops of the oils of fennel and juniper.

Bordeaux turpentine is obtained from the Cluster or Maritime palm (Pinus pinaster) when the trees are quite young. *Canada Balsam* is a turpentine, but chiefly used as a cement.

Strasbourg turpentine is extracted from the silver fir, *Abies pectinata.* It possesses an agreeable aromatic odour, and an uncommonly bitter taste. It is rather thick, but very clear and tenacious, and is commonly of a yellow colour.

Venice or *Venetian Turpentine* is an excellent quality when genuine. It is really obtained in the South of France and Tyrol, from a species of larch (*Larix europæa*), but was originally largely exported from Venice. It is a pure resin, and should not be confounded with American "turps." It is used in the paints and varnishes for strengthening them and preventing cracking during the drying process.

The genuine article is sweeter and less resinous-tasted than common turpentine, and contains sucinic acid, but is now rarely sold in the shops.

Most of the turpentine sold under that name is nothing more than a mixture of about 8 parts of common yellow or black resin with 5 parts of *oil of turpentine,* and has a strong smell, with a hot, disagreeable taste. Turpentine is imported in barrels of 2 cwts. to 2½ cwts., and has the appearance and consistence of treacle or honey.

It weighs 8½ to 8¾ lbs. per gallon. Market values: American, about 22/-; Russian, 20/-; Venetian, 60/- to 70/-; Artificial, 30/- to 40/- per cwt. Turpentine is often discoloured through being stored in iron cisterns. Tricky vagabonds, aware that oil, being lighter than water and floats on the top of it, have been known to three-parts fill bottle-shaped cans with water, and then, after adding a little turpentine, offer "cheap" canfuls to snappers-up of bargains.

Turpentine Oil, or **Spirit.** — F. *Huile de Térébenthine;* G. *Terpentinöl;* It. *Acqua di Rasa;* Lat. *Oleum terebinthinæ;* Sp. *Aguarras.*

This is a volatile oil or spirit, distilled from crude turpentine itself. There are three sorts—the best is *colourless,* the second *red,* and the third *white.* They possess strong solvent properties, and should be kept off the hands. The chemical composition of this kind of oil varies very much but usually consists of 88·2 per cent. of carbon, and 11·8 per cent. of hydrogen.

When about one-fourth part of this oil or spirit has been distilled from the crude turpentine, the remainder is termed *colophony.*

The French product is much preferred o the American import, which latter isually has a nasty sickly odour. A imple test for purity is to drop a little on a sheet of clean writing paper; it oure, it will evaporate in a few minutes, nd leave no mark behind; but if adulerated with other oil, a greasy spot will emain for hours. If adulterated with enzine, the evaporation will, on the ther hand, be more rapid than with the ure. Very old turpentine often turns atty, and is then as objectionable as if dulterated.

Adulterated turpentine also shows a luish colour if in a narrow, clear glass ottle, and examined in different lights.

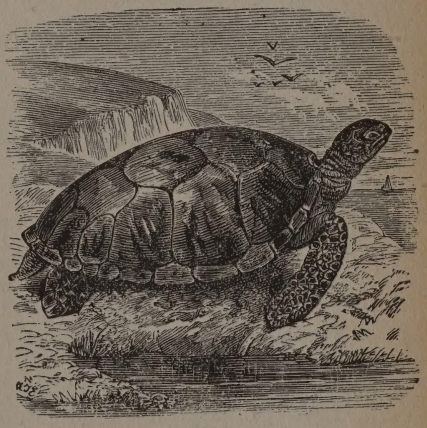
It is used by house painters and varnish makers; also in medicine.

Turpentine (or **Terebene**) **Soap.**—Sometimes called *Starkey's Soap.*

It is a very pleasant and a powerful disinfecting soap, made by mixing 4 to 6 pints of terebene into 112lbs. soap while in a liquid state, and well stirring the whole. Its active principle, *terebene* (or turpentine), is obtained from the juice of the long-leafed pine. When exposed to the air it volatilises and creates a rather offensive odour, developing ozone in the air.

Cleaver's terebene soap seems to contain about 4½lbs. of terebene to each cwt. of toilet soap, and about 6lbs. to each cwt. of laundry or household soap.

Turtle Flesh, Eggs, etc.—(See also *Dried Turtle*, *Terrapin*, etc.)—There are numerous kinds of turtle, but although the *Chelonia virgata* and the Hawksbill turtle (*Chelonia imbricata*) of the Indian Ocean, the estuaries of the Indian coast, as well as the southern shores of the Atlantic, are well known and valued both for their flesh and shell, only one kind is appreciated for its flesh in this country, and that is the green turtle (*Chelonia mydas*) of the West Indies, the Gulf coasts, and the warmer of the American coasts. They are the largest of the turtle genus, and receive their name from the green colour of their fat. They live mostly in the water feeding on seaweeds, but come on the sandy shores to lay eggs, which are about the size and colour of pigeons' eggs, only they are soft and round. Turtles lay eggs only three or four times a year, but generally 150 to 200 at one time. The eggs are considered a great treat, but will not keep good many days, hence are often smashed up for the oil or "turtle grease" they contain. In their natural freedom the mother turtles cover the eggs in the sand. On the banks of the Orinoco and Amazon, where there are millions of these turtles, the Indians take large quantities, and from these they obtain a kind of clear sweet oil, which they use instead of butter. An Indian will eat 20 or 30 eggs at a meal, raw or cooked. They also make excellent



TURTLE.

omelettes. The young are hatched by the heat of the sand alone, and when full grown often attain a length of 5 or 6 feet, and 600 or 800 lbs. in weight. Large quantities of green turtle, as well as soft-shell crabs and terrapins, are now being canned at Crisfield, on the eastern shore of Maryland. Those locally known as Hawksbill are not so edible, but often sell for £2 or £3 each in the Bahamas, on account of their beautiful shells.

Turtles can live many months without food, but, as the ultramarine meadows yield plenty of food, they are seldom driven to straits.

They are caught by harpooning or by nets, or on shore by merely turning them over on to their backs, in which position they are helpless, and cannot escape.

Large numbers are imported alive into this country from the West Indies and Ascension Island. They are usually kept in tanks by the turtle merchants, and killed as required, so as to supply meat, soup, or eggs, fresh to hotels, restaurants, etc., either direct or through the shopkeeper.

The edible (green) species also abounds in the shallow seas around the Bahama Islands, and here would seem to be a grand opportunity for enterprise in establishing a factory for the preparation of Concentrated Turtle Soup. Turtle is there commonly sold at 3d. per lb. The flesh is very tender, palatable, and wholesome, but very cloying.

The "meat" is called *callipash* and *callipee*; "callipash" being the dull green gelatinous substance (often miscalled "fat") which is prepared by the experienced cook from the upper shell, or *carapace*, of the turtle, and is highly prized by epicures, while "callipee" is the light yellow-coloured prepared from the under-shell, or plastron.

Callipash and callipee, also *turtle fins*, are ordinarily sold wholesale in quart tins, at 8/6 to 9/- per tin.

Turtle Soup. — (See also *Mock Turtle Soup*.)—This is probably the richest, most esteemed, and costly kind of soup made in this country. It is very popular at aldermanic feasts, and especially so at the Lord Mayor of London's annual dinner at the Guildhall, but has only come into fashion during the last hundred years. It should be made from the flesh of the green turtle above referred to, added to an ordinary soup stock, but may also be prepared from tinned turtle. It usually contains pieces of ham and veal, and is seasoned with sweet herbs, bay leaves, parsley, onions, cloves, and mace; Madeira wine is also often added.

The flesh and eggs may all be used. Turtle soup, being exceedingly rich, is apt to disagree with weak stomachs. *Turtle Diamonds* are the choice parts of the turtle cut into diamond-shaped pieces. Turtle is also prepared and sold in tablet form.

Turtle Soup is very difficult to prepare properly, and is seldom made in private houses; when wanted it is usually bought ready-made. An ordinary price for soup, freshly made from newly killed turtle, is a guinea a quart, but a small pint tin contains sufficient turtle for making six to eight quarts of fair soup.

These tins are sold wholesale at 50/- to 55/- a dozen.

Tuscan Oil. — A general name for the olive oils of Tuscany. They include the products of the Lucca, Florence, and Leghorn districts. The Tuscans were the first to export olive oil largely, and hence the name and reputation each has acquired. Leghorn may be considered the chief centre of the trade. In that province the olive tree forms one of the main agricultural resources, about 270,000 acres being devoted to it, while the annual yield is about seven million gallons of oil; but much is also produced in the districts of Calci and Buti, in Pisa. When obtained from sound, well-matured fruit and with proper skill and attention given to its extraction, genuine Tuscan oil reaches the highest standard of excellence, and surpasses all others.

The olive groves which clothe the hills extending from Pisa to Viareggio on the Genoa-Pisa line, and from Pisa to Pontedera, on the Leghorn-Florence line, are famed for the oil they produce. The qualities of delicate flavour, fine light golden colour, medium density and keeping long, depend on the soil, the topographical position of the groves, the climate, and the species of tree planted. The slopes of hills, with suitable exposure, and a rocky or calcareous subsoil, are the best for the production of the finest oil, though in other situations the tree may vegetate more luxuriantly. The *Razzo* olive tree is the best of all others for oil-producing, and is that favoured in Lucca and Pisa. The best oil is made in the first two months of the year. The tree attains to a great age; it may bear for some hundreds of years, but the average life of the culti-

vated tree is thought to be from 100 to 150 years. The fruit is all hand-picked. So many favourable conditions are required to combine for the production of the best quality of Tuscan oil that it is necessarily restricted in amount, and always commands a good price. Much of what is sold as Lucca oil is, at best, a mixture of inferior Tuscan oil with the still cheaper and more inferior production of Bari, in South-Eastern Italy. Much Bari oil is taken yearly to Leghorn, Lucca, and other markets in Tuscany, and re-exported as Lucca oil. It should be remembered that olive oil may be pure, in the sense of being wholly free from adulteration, and yet be rank, nauseous to the taste, and even ill-smelling. Purity alone is not enough; one quality also is needed. There is also much adulteration of olive oil with seed oil, especially the oil of the cotton seed, which is the cheapest of all. Such oil is as far removed from one Lucca as sweet cream from rank tallow. Italy alone produces 90 millions of gallons of olive oil, while the Tuscan production, as has been said, is only about seven millions.

A large quantity of the Tuscan is annually sent to Nice, where it is used to improve the local product, which is then exported under the name of Nice or Provence oil, but some is bought up and refined by Leghorn merchants, and sent to England and other countries.

Comparatively small use is made of olive oil in English cookery, even in salads. Oils in Florence flasks are now very rarely, if ever, genuine. The glass is very delicate, and wicker work very pretty, but the contents are either adulterated mixtures or purely cotton seed oil. (See *Olive Oil*.)

Tutti-Frutti or **Tous-Fruits.**—The first-named is an American sweetmeat, composed of choice and rare fruits frozen in the best ice-cream, and often flavoured with a little sherry wine.

Figs, dates, seedless raisins, pineapples, cokernut, and occasionally a peach or two, are all chopped up into fairly small pieces, and well mixed together. The ice-cream is then frozen and rubbed smooth, but before it hardens the dasher is removed, and the fruit put in and well mixed with the cream. The can of the freezer is next revolved rapidly without the dasher, so as to thoroughly harden the mass. On removing the cover, the can is inverted over a glass plate, and a cloth with hot water applied to the outside of the can, when a solid mass of tutti-frutti is deposited in a pleasant shape on the plate, and ready to be cut in slices.

Usually sold in ornamental boxes containing 3 dozen pieces in each box.

Tous-Fruits is a sort of mixed jam made in France from oranges, orange and lemon peels, angelica, etc. *Pepsin Tutti-Frutti* is a name given by Adams, Sons, and Co., Brooklyn, New York, to a variety of chewing gum. It is flavoured with oil of peppermint, and each tablet is said to contain 1 grain of Armour's high-test pepsin, guaranteed to digest 2,500 grains of meat.

Tutu Berries. Wine, &c.—These are obtained in New Zealand from a species of *Cariaria*, known there as "tutu," a poisonous plant, which has been largely utilised by the Maories. They express from the juicy fruit an agreeable and non-intoxicating beverage. The juice is also used for tatooing, sweetening drinking water, and to sweeten and colour the jelly from certain sea-weeds, but in the early days of Wellington a whole family were poisoned through eating a pie made of the berries. From the hollow stems of the plant flutes are made, and the root is eaten in New Plymouth.

Twankay or **Tonkay Tea**—(See also *Green Teas* p. 441.)

These are names given to the superior qualities of green tea long grown and prepared in the province of Che Kiang, Kiang-su, in the valley of Twankay, China, but tea-growers in Ceylon and India are now using the name Twankay for their green teas.

The following description of the method of manufacturing green tea is approved by the Ceylon Thirty Committee:—

First.—Take the green leaf straight from the field and steam at once in a Quitah machine (a long, narrow revolving box); full steam must be turned on for five minutes, and then shut off; the leaf is then kept in a steam box for another ten minutes, the box kept revolving meanwhile, in order that each leaf may get the full benefit of the steam. The leaf is then examined, and if found pliable (like slightly under-withered leaf) it is taken out and spread on tats to drain off the superfluous water; if the leaf is not found to be sufficiently pliable, another two minutes in box should be allowed. Some time should be allowed for draining off the water.

Second.—A suitable quantity is then taken to the roller and rolled for half an hour *lightly*. After being discharged, all lumps (of which a great many will be in evidence) must be carefully broken by hand.

Third. — The roll is then taken to the drier, and partially fired to rid it of excess of moisture, care being taken not to allow it to become crisp.

Fourth.—It is then rolled again for one hour. Owing to the brittle quality of the leaf after it has been submitted to the steaming process, it is not possible at any time to apply weight to it in rolling. After discharge from roller, the leaf must be again carefully broken by hand.

Fifth.—Then final fired. This last operation must be thoroughly completed, care, however, being taken that it is not allowed too high (say D. D. Sirocco 210 deg. to 220 deg. should be the maximum), as the leaf very easily *blisters*, also a "toasted" flavour (which is objectionable) may be imparted to the tea. Firing should be as brisk as possible, as it adds to the pungency of the tea, the points mentioned above being carefully observed. Sifting process: The bulk is first passed through a No. 12 sieve and called Young Hyson, then No. 10 sieve and called Hyson, then No. 8 sieve and called Hyson No. 2, and what remains on top of No. 8 has to be broken through it. Dust from Young Hyson should be mixed with the lower grades. There should not be more than from 10 to 12 per cent. of dust altogether from the other grades which is called "Twankay."

It loses about 43 per cent. by infusion.

There are several sorts of Twankay, and over half the green tea imported into England is of the Twankay type.

U

Ucububa Wax. — See *Vegetable Waxes.*

Udika Fat.—See *Owala Seed.*

Ullucus—The tubers of the *Ullucus tuberosus*, an herbaceous plant belonging to the natural order *Chenopodiaceæ*, a native of Peru and Bolivia where they are largely eaten as food. They are very like small potatoes in appearance, but in substance rather close and waxy.

Ultramarine Blue.— Du. *Berg Blaauw*; F. *Bleu d'Outre-mer*; G. and Rus. *Ultramarin*; It. *Oltramarino*; Port. *Anhil de ultramar*; Sp. *Ultramar*; W. *Tramar.* (See also *Smalt* and *Laundry Blues.*)

Genuine ultramarine is a fine blue powder, prepared from the blue part of a mineral called *Lapis-lazuli*, mostly found in Siberia, Persia, and Thibet and cobalt, and is largely used by artists. It is the purest blue obtainable, but is very costly, dearer than gold. It possesses the property of never fading nor becoming tarnished by exposure to air or moderate heat. To ascertain whether it be genuine, heat a little of it red hot on an iron; if good its colour will not alter, but if adulterated, there will be dark-coloured spots appear on it.

Artificial Ultramarines, French and German Blues, and *British Ultramarines*, prepared with china clay, soda, etc., are now more generally employed, but these are much cheaper preparations for the use of house painters, laundresses, etc., and are of a very dark and chromatic violet blue. Artificial ultramarine was first discovered by J. B. Guimet, a French chemist, in 1286, and also by Gmelin, in the early part of last century. These blues are not very permanent, but are practically

as valuable for some purposes as genuine ultramarine, and are made in all shades at a mere fractional cost. The Guimet factory at Fleurieu sur Saône is still the largest in the world.

Umber.—F. *Terre d'Ombre* (Lat. *Terra umbra*); W. *Lliw.* (See also *Ochres, Sienna,* etc.)

A dry, dusky-coloured pigment which, when mixed with water, makes a permanent, warm, rich brown. The natural earth, an ore of iron and manganese, is called *Raw Umber*, or *Umber Earth*, and is a very dark yellow, but when made to almost a red heat in a furnace, the brown hydrated oxide of iron is changed into red oxide of iron, the pigment becomes redder and deeper in colour, and it is afterwards known as *Burnt Umber*. Both kinds are extensively used by artists and house painters.

Umber is found in Derbyshire, Wales, Devonshire, and Cornwall, but the bulk is imported from the Continent, and the best comes from Cyprus, where it occurs in beds with brown jasper.

Being usually imported through Constantinople, and practically as ballast, it has got the name of Turkey umber. There are three main sorts, namely: *Lisamol*, a quite light earth; *Larcana*, a darker material; and a third, which is quite dark, or even black. The burning of umber is much the same as that of sienna or ochre. The material is made into lumps as big as melons, and put into the furnace on iron gratings. This treatment much improves the colour. The main cost is the freight, labour, levigating, packing, etc. Burnt umber fetches about £3 a ton, and when burnt and ground £5 to £7 a ton, in bags or barrels. It is mostly prepared in London.

Umbila.—See *Maize.*

Unfermented Wines.—(See also *Beverages, Non-Alcoholic Beers,* and *Temperance Drinks.*)—These are often called Sacramental Wines. They consist of either the boiled juice of the grape or the water infusion of dried raisins. They are supposed to have only enough alcohol mixed with them to keep them good for sacramental purposes.

Rota Tinto is a familiar example. Some makes are slightly fermented—that is, fermented up to the point of generating the necessary amount of alcohol, instead of adding spirit. An old method sometimes brought into use was practised by the Egyptians before the birth of Christ. The art was to press the pure juice of the grape into the bottles, and then pour olive oil in at the top of each bottle. This effectually excludes the air, and none can work down into the wine to ferment it. At the same time, any air that was in the juice finds its way up through the oil. When the wine was wanted for use the oil was absorbed by a little cotton.

Apply to Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool.

Usquebaugh (pr. *usk-we-baw*).—F. *Scubac;* W. *Dwfr y Bywyd.* (See also *Whisky, Potheen,* etc.)

The modern word "*whisky*" is a contraction of the old Celtic name usquebaugh, or Escubac, literally meaning *Eau de vie* (water of life), or mad water. It is a strong and highly-spiced spirit distilled from barley, and the word is still used in Ireland for malt whisky, although the modern compound is very different to the old-fashioned product.

A highly esteemed kind of usquebaugh is still made about Drogheda, in Ireland, as follows:—1 gallon best brandy, 1lb. stoned raisins, 1 oz. each of cinnamon, cloves, nutmegs, and cardamoms, crushed in a mortar; ½oz. of saffron, the rind of a Seville orange, and 1lb. of brown sugar candy. These are mixed together, shaken well every day for at least three weeks, and finally filtered for use.

V

Valencia Almonds. — (See also *Almonds.*)—A sweet variety, somewhat similar to Jordan almonds, but shorter and broader, being from ½ inch to ¾ inch long, with dark dusty skins; also cheaper.

Mostly imported, without the shell, in 28lb. boxes, from Malaga.

Valencia Onions.—See *Spanish Onions.*

Valencia Oranges — (See also *Oranges.*)—Oranges are the most important export from the province of Valencia, in Spain. It is a very old industry. It was steam navigation that about 1855 started their import into England. The average crop is about 3,000,000 cases. For England they are packed in cases of 420, 76 kilos in weight, and from 96 to 97 centimetres long, and in cases of 490 oranges, 70 kilos in weight, and 90 to 92 centimetres long. To the United States they go in cases with 420 oranges, 80 kilos in weight; to Holland and Germany, 420 per case; to France in cases of 240, 312, 420, and 490 oranges. The cases are made of Spanish pine timber, and cost, ready-made, 9d. to 1/- each. Paper 6d., gathering and packing 4d., nails and hoops 1d., makes the total cost per case very trifling, say, 6/9 to 7/3 f.o.b. at Valencia.

Valencia Raisins.—A very popular kind of raisins, possessing the finest flavour, and which derive their name from the province in Spain where they grow.

They are cured by dipping the ripe bunches of grapes into a hot lye, prepared of wood ashes, oil, and salt, and afterwards the raisins are finally dried in the sun.

They used to come "in the bunch," but now loose, picked off the stems, and closely packed in small wooden boxes, so as to preserve their flavour and freshness long as possible.

There is a stoneless variety of these fruit, rather smaller in size, but no great quantity of these come to this country.

New crops usually arrive in this country in August. They are apt to diminish in weight, both in bulk and when weighed up. Valencias are mostly used in cookery, making puddings, fancy cakes, etc.

Valonia.—The cups of a large species of acorn (*Quercus ægilops*, together with "*Cameta*" and "*Cametina*," its young acorns), imported from the Levant, and mostly used in tanning leather, being much more portable than bark.

Valonia has been very extensively and profitably cultivated in Bagamoyo, Africa, by the priests of the French mission. (See also *Galls.*)

Valzin.—(See also *Saccharin.*)—A new German substitute for saccharin and sugar. It was first discovered in 1883 by a Berlin chemist, and is now produced there by a patented process. It is said to be about 200 times sweeter than sugar, and without the disagreeable properties of saccharin.

Vanilla.—Da., F., and G. *Vanille;* Du. *Vanilje;* Port. *Bainha;* Rus. *Vanil;* Sp. *Vainica;* Sw. *Vanilj.*

Vanilla plants are a genus of trailing or climbing orchids, named *Epidendrum vanilla*, of which the species known as *Vanilla planifolia* (flat leaves) is by far the most valuable for producing the fragrant vanilla pods or beans of commerce.

The name comes from the old Spanish "Vainilla," the diminutive of *Vaina*, a pod, sheath, or scabbard. The shape of the pod suggests the name.

Its home is in Central America and Mexico, but it also grows in various parts of the West Indies and in the Fiji Islands, merely requiring a mean temperature of 75° to 80°. It is also

cultivated extensively in plantations in the Mascarine Islands, and by the priests of the French mission at Bagamoyo, Africa, being easily propagated

by planting cuttings at the foot of trees selected for the purpose, and bears from three years until thirty or forty years old.

It is not wholly a parasite, although it appears to be little dependent on the soil for nourishment, yet thrives best in a light soil, rich in humus, like ivy. It will climb 18 or 20 feet up any tree that grows near it, and bears thick dark green leaves, with smooth, flat surface, greenish-yellow flowers mixed with white, followed by slender three-lobed pods, 8 or 10 inches long, and a quarter or half an inch in diameter, which are dark green at first, but are curved and yellow when fully ripe.

These oblong pods are filled with pulp and minute black oily seeds, like iron filings, and when gathered emit an aromatic odour so powerful as to often intoxicate those who climb the trees to pick them. They are gathered when just turning yellow, and before they are fully ripe, or they are apt to split in two and lose the exquisite and highly prized liquid known as the *baume de vanille*, an article rarely seen in England.

If picked too green they keep badly, and contain very little perfume.

When dried in the sun the pods turn to dark brown, or almost black, and shrink to about a quarter their original bulk. They are usually tied in bundles of 50 to 100, and either wrapped in tin-foil or packed in tin boxes.

The world's consumption now amounts to about 250,000lbs. a year. England is chiefly supplied from Réunion, the Seychelles, and Fiji Islands. The Javã product seems to be dying out, but what there is goes to Holland, the Mexican *Vânilla de Leg*, or *Lec*—amounting to about 100,000lbs. a year—mostly goes to New York, while France obtains her supplies from Réunion, Tahiti, Mayotte, etc. The Mauritius and Seychelles products are paler and fainter in odour than that from Réunion, and realise lower prices.

There is hardly a sugar estate in the Island of Réunion which has not more or less land under vanilla. In some districts there are large planters who cultivate nothing else; and, as regards the districts of St. Rose, St. Phillippe, and St. Joseph, this industry is the mainstay of the people. The occupants of almost every hut cover their yards, courts, and plots with vanilla creepers. When the pods are ripe the lower part begins to turn yellow, and they are then gathered and sold fresh to some neighbouring merchant, who attends to the curing and exploiting.

One method in marketing *Vanilloes* is that of keeping them moist, or rather wet, preserved in alcohol, and bottling them before sale to retailers; but they really keep better in tins, closed, but not air-tight.

Another plan is to dry the raw vanilla in an hermetically closed vessel by means of an equal weight of chloride of calcium. This seems much the best way, for it is obvious that vanilla dried in an air-tight vessel must loose much less strength than when dried by exposure to the open air for several weeks. One lot of chloride of calcium may be used several times over, if regenerated on each occasion by heating it in an iron or copper receptacle, and keeping it after regeneration in an hermetically closed vessel.

It is said that by placing the pods in alcohol when freshly gathered, a much more fragrant tincture is obtained than from the dry and cured beans; but, of course, the pods are partly exhausted by this process, and not so valuable afterwards.

Old vanilla is also less valuable, has a wrinkled surface, and little or no white dust, rime, or "frost" outside, also weighs light, although it is often freshened up with almond oil, or balsam of Peru.

The vanilla pod often contains a minute kind of acarus, which has often been known to cause serious skin disorders, known as "vanillism," to those engaged in sorting or handling it.

The use of vanilla seems to have originated with the Aztecs, in Mexico, where it has always been used in flavouring chocolate. It grows wild in the States of Oaxaca and Vera Cruz, but is also largely cultivated in the cantons of Misantla and Papantla of the latter

State. Six varieties of vanilla are known in Mexico, *mansa, cimarrona, mestiza, pompona, puerca*, and *mono;* but the first is the only one cultivated. The cimarrona has a more pointed leaf and a thinner vine, and the pod is shorter, rounder, and thinner. The mestiza also has more pointed leaves, but is larger than the cimarrona, and is very like the mansa. The pompona, or *banana vanilla*, as the Totonaco Indians call it, has larger and rounder leaves, and the vine is one-half thicker than mansa; the pod also is double the size, and triangular in shape, with a flavour of anise. This kind is used in Havana to mix with cigars. The other wild kinds are seldom gathered for commerce.

In Mexico, 100 vines at three years old yield on an average, without any cultivation, 50 to 65 pods; at four years, 165 to 225 pods; at five years, 325 to 500 pods; after this the yield diminishes to the tenth year, when it is necessary to destroy the vines, and replace them with new ones.

From the third to the tenth year each plant may thus average two pods a year; but, if properly cultivated, the crop of pods is infinitely larger, say, 20 to 30 pods to the vine. Vanilla is bought and sold in Mexico by the 1,000 (millar). Green vanilla sells in Oaxaca, Michoacan, and Misantla at 40 to 50 dollars per 1,000; and in Papantla and Tuxpan at 50 to 75 dollars. The Tuxpan Valley is evidently the home of this valuable orchid, for there is more exported from Tuxpan than from any other port in the world.

The merchants make good profits out of the vanilla business, sometimes as much as 300 per cent.

Tahiti Vanilla.—Vanilla has been cultivated in Tahiti for many years, chiefly in the district of Papara, where there is one plantation—the Tamarua—over fifty acres in extent, and which yields 100 to 300 lbs. an acre yearly. The beans there after gathering are filled into small boxes, 6 by 4 by 2 inches in depth, made for the purpose, with glass lids, and lined with double flannel. After exposing these boxes to the sun for about a fortnight, the beans are found to be sufficiently sweated, and are then removed from the boxes and taken into a drying house of corrugated iron, where there are three tiers of wire shelves. The beans are spread out on the top tier first, and left there for a few days, then to the second and third as they gradually dry. When perfectly dried or cured they are tied in bundles, and are ready for market.

This Tahiti vanilla mostly goes to France, but some goes to the United States and England. It is, however, inferior to the Mexican, Bourbon (Réunion), and Mauritius.

The best vanilla is grown in Mexico. The pods should be sound and black, perfectly smooth, and without excressence or holes. They should be about seven to nine inches long, and the split, if any, should never extend to more than a third of the pod. Other sorts, neither so strong nor delicate, come from Honduras, La Guayra, and Brazil.

The inferior and cheap vanilloes are the short, damaged pods—some immature, some over-cured and hard, and those which are split the whole length. The best exceed in value four or five times that of the inferior qualities, and prices vary from 6/- to 30/- a pound.

Vanilla pods are gathered in November, or early in December, but, as they often occupy four or five months in curing, they do not usually reach the markets till spring or early summer.

The principal stock in Europe is usually kept in France, especially at Paris and Bordeaux.

The various preparations of vanilla are used for flavouring chocolate and confectionery, and for culinary purposes, making perfumes, etc., and appear to be growing in favour. Like many other odours, it does not become pleasant till sufficiently diluted.

Importers.—Charles Cocks & Co., Reading; Kimpton Brothers, 36 and 37 Mincing Lane, London, E.C.; C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Vanilla Essence.—This is the form in which vanilla is most commonly used. It is easily prepared by soaking the pods in dilute alcohol or spirits of wine, then straining and bottling the liquor, which

should be kept tightly corked, or its virtue quickly escapes.

Example :—Soak 4 ozs. vanilla pods in a pint of spirits of wine or rectified spirit for two months, and then filter. Colouring matter is often added in the form of burnt sugar, caramel, or saffron, and sometimes a little clove or musk is also added to improve the flavour.

Vanilla Extract is nothing more than a misnomer for *tincture of vanilla*, and may be prepared from the pharmacopœial directions.

Another preparation consists of vanillan crystals, 5 drams; absolute alcohol, 20 fluid ounces; and distilled water, 15 fluid ounces. Dissolve the crystals in the alcohol, and add the water.

Vanilla Frost or **Rime.**—The frost-like acicular crystals which form on the outer surface of the best kind of vanilla pods, to the extent of 1·3 to 3 per cent. These small crystalline "needles" are soluble in hot water or in alcohol, and have a hot, biting taste. It is really this substance which yields the aromatic principle of vanilla. Sometimes adulterated with boric acid, ground glass, etc., to represent crystals.

The brilliant, silvery, and highly valuable efflorescence which sometimes covers the whole vine is called *Vanilla Rime*, and it produces an essential salt similar to that found in the pods and outside the capsule.

Vanilla Sugar. — F. *Sucre de Vanille.*

This is made by slicing the pods and grinding the pieces with two or three times their weight of well-dried lump sugar. Small quantities are readily produced by rubbing the pods in a little finely powdered sugar.

Sometimes, after slitting and finely chopping the beans, they are pounded in a mortar with pulverised sugar.

The above mixtures are finally passed through a sieve, and bottled as "Vanilla Sugar." In some qualities 10 or 12 parts of sugar are employed, with only one part of vanilla pod.

Vanilla Syrups and Jellies.—Simply syrups or jellies flavoured with vanilla.

Vanillin.—An imitation of the crystalline principle of vanilla sugar, prepared artificially from the juice of pine wood and oil of cloves. It is cheaper, but, of course, much inferior in quality, and, as with most imitations when known, its use is decreasing, while that of genuine vanilla is increasing. The name Vanillin is also used for sugar which has been powdered and saturated with vanilla essence.

Varixia.—An advertised panacea for varicose veins, and sold in 2 oz. bottles at 2/9 each. The proprietor, a Mr. Hall Grigor, at the Bow Street Police Court, April 26, 1899, was proved to have had these bottles filled by a chemist at the rate of 2½d. each, and to have then re-sold same to the public at 2/9 each. The chemist had really compounded a gallon of it for 16/8, and said it was made up from Witch Hazel, 25 ozs.; Proof Spirit, 1 quart; Spirits of Chloroform, 16 ozs.; and water.

Varnish.—F. *Vernis;* G. *Firnisse;* Port. *Verniz;* Sp. *Barniz;* W. *Adliw.*

Good varnish is a composition of volatile oil, gum, and turpentine, so united as to produce a substance which, when applied to the surface of an object, leaves a smooth, glossy, and impervious coating, rendering it more easily kept clean and bright, bringing out into prominence any beauty of grain or marking of natural growth, and to harden or protect perishable material from damp, rust, and decay. The best qualities are those which afford the greatest hardness, permanency of lustre, transparency, power of excluding air and moisture, with non-liability to crack or become discoloured.

Varnish-making is still a secret trade, and the nature of varnishes, more than any other artists' materials, is involved in much obscurity. There are no chemical methods known for ascertaining the nature or proportion of the ingredients used in their preparation, and, as time is the most important factor in proving the quality of varnishes, direct practical experimental tests might be misleading.

The chief *Oil varnishes* are copal, amber, and anime. These, being the

hardest and most durable, are the kinds mostly used by japanners, coach painters, and house decorators.

The chief *Spirit varnishes* are made from mastic, lac, sandarac, benzoin, and camphor gums, but these are much more liable to crack than the former.

The principal varnish gums pass under the generic term of *Shellac*, but this is a popular mistake, for, in speaking of varnish gums, the fossil copals are generally intended, and shellac, although the chief kind of gum used in varnishes, is not a fossil. The ordinary fossil copals used in varnish-making are the *Zanzibar*, of a beautiful amber colour, found on the Wawandi River; the outside is like "goose flesh," and is known under that name. Its specific gravity is 1·068, melting point not less than 450° F. Other varieties come from Madagascar and Demerara, the yield of a species of Hymenæa genus of tree, specific gravity 1.03, melting point over 450° F.

The West Coast of Africa also furnishes valuable kinds, the principal being Benguela and Angola, in the Congo districts, and called by the Bunda negroes Ocota, Cocoto, or Mucococto, but the botanical source is so far unknown.

Manilla Copals (botanical source unknown) are merely so called from the fact that they are shipped from that port. The great bulk of these sorts come from the Dutch East Indies, and are consigned to Amsterdam for sale.

Gum Damar, an exudation of the *Dammara orientalis*, obtained by periodically tapping the tree. The principal varieties are "Batavia," from Java and Singapore, and Padang from Sumatra. Damar has also a high specific gravity and a low melting point.

Kauri Gum is a very popular variety, and is more fully described under *Kauri* (which see).

The ordinary varnishes in use are :—

Black Varnish for Leather, a shellac varnish, with lampblack and a little camphor added. If good, it dries perfectly in about five minutes on the shoe, strap, etc.

Bookbinders' Varnish is a shellac varnish, made colourless and transparent as possible.

Brown Hard Varnish is usually made with gum sandarac, shellac, and spirits of wine, with turpentine varnish added afterwards.

Coachmakers' Varnish, or *Carriage Varnish*, is simply the best copal varnish which is rubbed down, covered with repeated coats, and elaborately polished.

Copal Varnish is gum copal broken up and dissolved by digestion in purified linseed oil.

Crystal Varnish is made of balsam and turpentine. It is mainly used for maps, prints, drawings, cardboard toys, and ornaments.

Gum Sandarac Varnish is a colourless varnish, got by digesting 4 ozs. gum sandarac and 1 oz. Venice turpentine in 16 ozs. of alcohol, with the aid of a gentle heat.

Gilders' Varnish.—Varnish for gilders is composed chiefly of gumlac, gamboge, dragon's blood, annatto, and saffron, dissolved in alcohol.

Japan Varnish is a varnish containing a black pigment.

Mastic Varnish is made by dissolving the mastic with gentle heat in oil of turpentine, within a close glass vessel.

Paper Varnish, made with gumlac and borax.

Pliable Varnish is made by digesting 2 parts of shredded caoutchouc in 64 parts of rectified spirits, and this sort is generally preferred for domestic use.

Shellac Varnish is made by dissolving 2½ ozs. powdered shellac in a pint of spirits of wine.

White Hard Varnish, made with gum sandarac and spirits of wine.

A large number of varnishes are imported from Germany and France. They include turpentine, petroleum, and spirit varnishes. The first two are free from duty, but all spirit varnishes containing ordinary alcohol are liable to a duty of 10/10 per gallon of proof spirit contained. Some lacquer varnishes have been imported from New York, but the Customs duty charged on the acetic ether used is prohibitive. Fusel oil varnishes have also been introduced free of duty, as well as some Yankee carriage and metal varnishes. An attempt has been made to import enamels and varnishes

for picture frames and household furniture, but the duty charged on the spirit is equivalent to 12/6 per gallon. Collodion varnishes made with acetone and methyl alcohol are imported free in considerable quantities.

As already stated, there are no special tests for ascertaining the quality of a varnish. Spreading a thin layer on a sheet of glass, and then observing the character of the film produced on drying, seems all that can be done. It ought to become dry to the touch within eight or ten hours, and not become fissured even when exposed to sunshine during a year; nor should the surface become dull through the appearance of "bloom," caused by the minute exudation of solid fatty acids originating from the linseed oil employed in its preparation.

Variantes.— (See also *Pickles.*) — Variantes is the French equivalent for our "Mixed Pickles," but which may also include olives, carrots, green peas, capers, and other fruits and vegetables.

Vaseline or **Petroleum Jelly.**— Vaseline is a fancy name for that peculiar buttery hydro-carbon which remains in the still after distilling petroleum oil.

These more solid constituents are then carefully and repeatedly filtered through animal charcoal. It is really a wax in the amorphous condition, and consists of a mixture of solid and liquid hydrocarbons.

When purified it is colourless, and at ordinary temperatures either assumes the consistency of lard (melting under the heat of the hand) or forms an oily liquid. It is much the same thing as *Paraffinum molle* (soft paraffin) or highly refined Petroleum Jelly, only no acids are used in its manufacture. It is obtained mainly from American petroleum, but also from Galician, Russian, and German oils. Those from the three latter countries are best known as *Ceresine*, or *cerasin*. Vaseline was first invented by Mr. R. A. Cheseborough, New York, about 1870. The method of preparation is to a great extent a secret one, but is said to consist in the distillation of selected crude petroleum in vacuum stills, and the filtration of the residual pasty mass through animal charcoal.

Various substitutes, prepared by admixture of solid paraffin with highly viscous paraffin oil, are in the market, but the genuine vaseline is only obtained as above, and is water-white (colourless), has no particular flavour, and never turns rancid. Most of the German vaselines are artificial, semi-solid, unctuous productions, composed of 80 to 85 per cent. of liquid paraffin, and 15 to 20 per cent. of ceresin.

The prices vary from 24/- to 56/- per cwt.

Vaseline is largely employed in biscuit-making, confectionery, and chocolate-making, but, above all, in the extraction of perfumes.

Some imported kinds are only coarse mixtures of paraffin, wax, and heavy oils, which often have a tendency to separate.

Apply to C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Vaseline Soap. —Ordinarily made of 200 parts of cocoa-nut oil, 25 of vaseline, 95 of caustic soda at 40° B., and 5 parts of water.

Vaselone.—The name of a new product intended to compete with *Vaseline.* It is employed in pharmacy and perfumery, and is a solution of *stearone* and *margarone* in neutral mineral oil. Stearone is prepared by distilling commercial stearine with lime, and the distillation operated in a cylindric retort at a temperature above 400° Centigrade. Stearone melts at 86° C. Margarone is prepared by distilling ox-fat with lime, as for stearone. In 100 parts of mineral oil, well purified and odourless, 15 parts of margarone and 5 parts of stearone are dissolved. The fatty product obtained after cooling is *vaselone.*

It is white, odourless, neutral, unattackable by acids and chemical reagents, and it seems to have all the properties of vaseline, but is not so lucid.

Vauxhall Nectar.—See *Arrack.*

Veal and Ham Pies.—These ap-

petising delicacies sell well in summer time, when pork is considered out of season. (See *Pork Pies.*) They pay well, and have a large sale among excursionists, etc.

Vegetable Marrows.—F. *Aubergines;* Ger. *Melanzanäpfel;* Port. *Calabazas;* Sp. *Calabàzines.* (See also *Gourds* and *Egg Plant.*)

These are a variety of the gourd family, *Cucurbita ovifera*, native of Persia, but are more hardy than the others, and grow very rapidly.

They commonly attain about 9 inches long by 4 in diameter, both under glass and in the open garden.

For boiling as cabbage, they should be chosen young, about half grown, firm, and bright-coloured, smooth on the surface, and of good flavour. Like other cucurbitaceous fruits, are also eaten while unripe, but cooked. They are peculiarly tender and soft when boiled, but become almost tasteless if allowed to grow over-ripe. In season in July, August, and September. If cooked with sugar, a little ginger greatly improves the flavour.

Vegetable Parchment.—(See also *Wax Paper* and *Paraffined Paper.*)—A grease-proof paper, or imitation parchment, produced from strong unsized paper which has been immersed for a few seconds in strong sulphuric acid, say, a solution containing 1 part water to 6 parts of acid, or ordinary oil of vitriol, diluted with half its volume of water, and finally well washed in pure water, so as to remove every trace of acid, and dried.

Very serviceable at the counter in wrapping butter, lard, cheese, tea, or soft fruits, on account of its water, grease, and air-proof qualities; also to wholesale manufacturers and packers of these goods, and all kinds of tinned or canned goods, in lining the tins. Much seems to depend on the quality of these papers. The best cost about 5d. per lb., but it is said the lower-priced makes, when used to line butter casks, tubs, etc., are acted upon by the salt, and cause mouldy spots on the butter.

A medical contemporary recently stated the fact that microbes and bacteria may be conveyed to the human system by meat, butter, or cheese, etc., being wrapped up in newspaper, as printer's ink will attract and convey them, and the sterilisation of all such food which has been so wrapped up has been advocated. Now it is well known that vegetable parchment (also known as grease-proof paper) has long been used very largely by the best-class of purveyors of provisions; in fact, it is coming into more extended daily use as a perfectly clean and innocuous paper, but few persons trouble to think whence it comes. The fact is that until very lately all the vegetable parchment paper was made on the Continent, and principally in Germany. Paper makers have during the last few years tried to make it in this country, but, owing to the large quantity of sulphuric acid used in the parchmentising of the paper, and the consequent pollution of the streams, its manufacture in each case has been brought to an untimely end.

Apply to A. Norsworthy & Co., Importers and Merchants, Nottingham. (See adv., page 5).

Vegetable Soap.—A kind made in India, especially at Bombay, Jeypore, and Meerut. It is increasing in request by Hindus of the orthodox type, who will not touch a soap made of tallow or animal fat, as it is against their principles of religion to do so. Such people have hitherto either cleaned their hands with simple earth, or the soap-nuts of species of *sapindus* and the légumes of *Acacia concinna.*

Vegetable Tallows or **Waxes.**—F. *Cire Végétale;* G. *Pflanzenwachs;* It. *Cera Vegetale;* Sp. *Cera Vegetal.*

The chief varieties of *vegetable tallows or fats* come to us from Western China, Japan, Tropical America, and Africa, and comprise the following:—*Chinese White Wax, Japan Wax, Shea Butter,* and *Singapore Vegetable Tallow,* which are more fully referred to under their respective names.

Carnauba Wax, called also *Ceara,* or *Brazil Wax,* is obtained from certain species of palm:—*Copernica cerifera, Arrudaria cerifera, Corypha cerifera,* and *Marteo pernicia.*

Large quantities come from Rio de Janeiro, where it is found as a coating on the leaves of the trees. It has a high melting point, 82° to 83°, and is found very useful in candle and soap making.

Ibota Wax is a fine white sort from *Ligustrum ibotu*.

Myrica Wax, or *Myrtle Wax*, is obtained in some of the more Southern American States by boiling the fruits of *Myristica cerifera*, or allied species, in water. It melts at 45° F. A valuable wax is also produced in the Mesa Grande, California, and other parts of South-Western States of America by the insects *Cerococcus quercus*, which live on oak trees. This substance, of which the supply is well-nigh inexhaustible, makes an admirable chewing gum, taking and retaining the flavours better than any other. Part of it seems to be a true wax, but a part resembles rubber in its physical properties.

Ucuhuba Wax is obtained in the province of Para, Brazil, from *Myristica surinamensis*. A pound of the fruit yields about 4 ozs. of wax. It is olive green, melts at 40° F., and is used for candles.

Stillingia Tallow, a sort of Chinese vegetable tallow, is obtained from *Stillingia sebifera*, or Tallow tree, indigenous to China. It bears fruit about half an inch in diameter, in which three small seeds are enveloped in the tallow. Heat and pressure are employed to extract the tallow, which forms a white brittle mass. The Chinese use it for candle-making, but, as it is very soft, they give the candles made from it an outer coating of another vegetable wax, which is firmer. Shanghai exports about 70,000 piculs of this tallow (about 41,000 tons), worth about £88,000. *S. sebifera* has been introduced and naturalised in India and the hotter parts of America. Several trees of the genus *Hofea*, which grow in the Malay Archipelago, yield seeds from which a very similar product to that of the *Stillingia* can be obtained. The fruits of the *Hofea* are gathered as they fall, and are put to germinate in a somewhat damp place. They are then made friable by drying in the sun. They are next peeled and exposed to the steam from boiling water. When they are well steamed the fatty matter can be readily pressed out. The product obtained melts at about 45° C. Various other trees—such as *Myristica surinamensis*, in Guinea; *Myristica combo*, of the Congo; and another African tree, *Allanblackia*—contain a tallowy matter in their fruits, which in some cases is used in cookery.

Besides the above, there are *Orizaba Wax*, *Wax from Stic-lac*, *Bahia Wax*, and others—all vegetable waxes.

Vegetables, —See *Green Fruits*, *Compressed Vegetables*, etc.

Vegetables in Brine.—These are very extensively used in England by all manufacturers of pickles. The British Isles do not furnish enough gherkins, cucumbers, onions, and cauliflowers for the demand. The low-lying soil of Holland, often being 10 to 30 feet below sea level, is particularly well suited for vegetables. Immense quantities are cultivated by the small farmers there, and sold by them, generally in advance, to the exporting vegetable merchants of Rotterdam and Amsterdam; and these merchants, mostly Jews, dress and fill the vegetables into old wine hogsheads of about forty gallons each, with salt and water.

There being duties on imported salt in Holland, as on tea here, which are avoided when employed under Government inspection and re-exported, it is the practice for the vegetables to be brined and stored in bonded warehouses until wanted by the merchant for shipment to the English manufacturer. The prices, f.o.b., casks free, vary according to seasons and crops.

Best Cauliflower.—Large, close, and tender heads, without much stalk, for best pickles, 20/- to 40/- per hogshead.

Loose Cauliflower.—Ragged, stalky, and tougher, for cheap pickles, 15/- to 30/-.

Finest Gherkins.—Young, tender fruit, 1 to 2 inches long, 50/- to 80/-.

Spotted Fine.—Same size, but misshaped, crooked, or with black specks on, 35/- to 50/-.

Fine Bastards.—A larger size than above, say 2 to 3 inches long, 45/- to 70/-.

Bastards.—A still larger growth, 40/- to 60/-.

Chumps.—The largest size, commonly used for pickling, say 4 to 5 inches long, inside somewhat soft, 25/- to 40/-.

Spotted Mixed.—Consists of misshaped, faulty, and speckled, which have been picked out of the above qualities, 20/- to 40/-.

Double Chumps.—This is an extra large size, very apt to be soft or hollow inside, with loose seeds, and wasty, 18/- to 30/-.

Walnuts.—Should be green, young, and tender, not hard, tough, and shelly, 40/- to 80/-.

French Beans.—Long green swads, should be slender, young, and tender, not large, yellow, and fibry, 30/- to 50/-.

Red Chillies (large capsicums).—One or two of these are generally used for each bottle of pickles, 50/- to 80/-.

Red Cabbage.—Cut up, and packed tight, 15/- to 30/-.

Onions.—No. 1. Should be small, not larger than Barcelona nuts, crisp and white, 35/- to 70/-.

No. 2. A size larger, not often so firm, 30/- to 60/-.

No. 3. Largest size, ordinarily used, 28/- to 55/-.

No. 4. Very large onions, often soft and wasteful, only used in cheap pickles, or cut up for special preparations, 25/- to 50/-.

All the above vegetables are in brine, and the onions peeled, but, in addition to these, a vast quantity of pickling onions (*Dutch picklers*), as well as shalots, garlic, and red cabbages, come from Holland, rough and undressed, in bags of 50 kilos (about 1 cwt.) each.

All Dutch vegetables are cheapest from August to November. From November to March the canals in Holland are from time to time apt to be frozen up, and traffic is suspended. The prices depend on the seasons, and fluctuate very much. Some seasons these vegetables bring double what they do at other times. Vegetables in brine also arrive from France and America.

Like all other foods in salt, the vegetables should be kept closed from the sun and air much as possible, and covered with brine.

Apply to Allen Jeeves & Sons, Seddington, Sandy, Beds.

Vegetable Sponges.—See *Loofahs.*

Vejos.—A vegetable paste or food resembling ordinary Meat Extracts. It is claimed to be "partly pre-digested," and, although most people prefer to digest their own food, this is supposed to be advantageous to invalids.

Velvet Beans.—See *Beans.*

Venetian Red.—(See also *Ochres, Raddle,* etc.)—A scarlet ochre or mineral substance from Italy, resembling chalk. This earth is much cheaper than *Bole Armenian,* and is often substituted for it. Sold in lumps and powder.

Special Firm.—Punch Polish Company, Hick Street, Birmingham (F. Cooke, Proprietor).

Venice Soap.—(See also *Castile Soap.*)—A mottled soap, said to be made with olive oil and soda, with a little sulphate of iron in solution, or sulphate of zinc.

Veno Beno. — This brownish-coloured powder is a mixture of tea-dust and powdered catechu, or terra japonica, in the proportion of 2 ozs. of the former to 5 ozs. of the latter. It used to be said that a few grains of this put into a teapot more than doubled the strength of the tea. Catechu is undoubtedly an astringent, and is used by tanners, dyers, etc., as well as for other purposes.

Verbena Oil.—This is an otto, and one of the finest perfumes when genuine. It is obtained by distillation from the citron-scented leaves of *Aloysia citriodora.*

Owing to its high price, it is generally imitated for ordinary purposes by mixing the otto of lemon-grass oil with rectified spirits, and this passes off as oil of verbena.

Verdales.—See *Olives.*

Verdigris, or **Acetate of Copper.**—Da. *Spanskgrönt;* Du. *Kopergroen;* F. *Vert-de-gris, Verdet;* G. *Grünspan;* It. *Verderame;* Port. *Verdete artificial;* Rus. *Jar;* Sp. *Cardenillo, Verdin;* W. *Gwyrddrwd Efydd.*

It is also known among chemists as *Cupric oxyacetate, Aerugo,* and *Aerugo aeris.*

A blue-green poisonous rust, which readily forms on copper or brass. It is easily produced by the action of acetic acid, vinegar, or vegetable juices, and even by the exposure of the above metals to air and moisture.

In manufacturing commercial verdigris, copper plates are acted upon either by cloths dipped in vinegar, acetic acid, or cider refuse, or by layers of grape skins, or marc of the wine press, as in the South of France, and in a few weeks a green crust is scraped off the plates, and made into a kind of paste with vinegar, and pressed in moulds. The best is made at Montpellier, in France, and exported in 25lb. cakes, and is largely used by painters as a green glazing colour. It should be of deep and bright shade, free from grit, and smooth between the fingers. Verdigris is a very dangerous poison, and the utmost care should be taken that neither food nor drink ever be allowed to remain long in contact with kettles, pans, measures, or other utensils of brass or copper.

Verjuice—F. *Verjus;* G. *Agrest;* It. *Agresto;* Sp. *Agraz;* W. *Surlyn.* (See also *Siberian Crab-Apples.*)

A kind of acid liquor used as a culinary vinegar, and formerly in medicine. It is prepared from the juice of green sour fruits, such as wild crab-apples, unripe grapes, etc., and from sour cider.

Dilute acetic acid is often sold by chemists as verjuice.

It is very harsh and austere, but some cooks prefer it to lemon acid as an ingredient in sauces, ragouts, etc., where lemon flavour is not desired.

Crab-apple juice is good for strains, spasms, and cramps. In the vine-growing countries it is commonly made from immature grapes, also from a special yariety of vine. The juice, after expression, is allowed to stand a few days in open tubs till a scum forms on the top. If intended for long keeping, a little salt is added, and when the scum is removed the verjuice is bottled or jarred, or closely corked, or the surface covered with oil, to preserve it from the air. Sometimes it is preserved by evaporation to half its volume. Verjuice is largely employed in the manufacture of French liquid and paste mustards.

Vermicelli.—Du. *Meelnepen;* F. *Vermicelle;* G. *Nudelin;* Port. *Aletrias;* Sp. *Fideos;* W. *Toes Edafeddog.* (See also *Italian Pastes, Macaroni,* etc.)

Vermicelli is an Italian word, meaning *little worms* (from the Latin *vermes,* worm). It is the commercial name of a popular form of Italian paste, made of the same materials and in the same way as *macaroni*—that is, by pressure through the proper shaped holes, only the paste used is more compact than for the latter. There was until lately a prejudice against machine-made pastes, but this has been overcome; and very little of this paste is now made by the laborious hand process. It is now mostly made of the hard red wheat from the Black Sea region, mixed with the Italian wheat extensively grown in the plains round Foggia. For Vermicelli the paste requires very careful and long kneading, and, after being placed in the "cloche," or holed cylinder, 8 or 9 inches in diameter, and not unlike the rose of a watering-can, must be kept at a high temperature, so as to keep it soft and pliable. Extra force or pressure is also necessary to force the paste through the holes, owing to their small size. Vermicelli is, for above reasons, always ½d. to 1d. per lb. dearer than Macaroni.

The long threads, as squeezed from the press, are dexterously twisted into small knots while moist and pliable, and these are afterwards dried slowly on paper. Vermicelli is mostly imported from Nervi, Grognano, Torre-dell, Annunziata, and Amalfi (Genoa is the chief shipping port), where there are

several large paste factories, and comes in large cases, each holding 144 small chip boxes of about 4lbs. weight.

It should, of course, be free from mustiness, dampness, and taint, and the drier and more brittle it is the better. Purchasers should always take care to get it as fresh as possible; when old it has a rancid taste, which becomes very pronounced when cooked.

Vermicelli is commonly used in soups, broths, and for sweet puddings. (See also *Strichetti*, *Lazagnes*, etc.)

Like the other Italian pastes, it has come considerably more into use these last few years, and is now a very cheap food. The makers are called "*Vermicelliers*," and the factories "*Vermicelleries*."

Chinese Vermicelli.—There is a sort of vermicelli exported from Chefoo, China, but that is not vermicelli in the European sense of the word. We associate vermicelli with wheat, but the bales of clear white strings which come from Chefoo are made from beans, and much resemble isinglass—for which, indeed, it is sometimes sold.

Apply to Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool; or to Alfonso Garofalo, Manufacturer, Grognano, Italy.

Vermilionette.—A paint to replace vermilion. It is made by stirring up red lead with a solution of resin, and adding a solution of acetate or nitrate of lead until the whole of the coal-tar dye-stuff has been precipitated as insoluble lead lac.

Vermine Destroyers. — See *Insect Powders*, *Fly Papers*, *Beetle Powders*; also Index.

Vermouth, Vermuth, or **Vermoute** —A sweet and perfumed wine, or white *liqueur*, made in Italy. It is composed of white wine, angelica, wormwood, chamomile, and other aromatic herbs, and is much used as an aperient stomachic. That from Turin, "*Vermouth Torino*," is supposed to be the original and best; but much is also made in France.

Excellent French qualities are now made at Chambery and in the Ile d'Elbe.

Usually put up in litre bottles, and sold at 3/- each.

Vermouth is one of the many unofficial preparations which require a wine licence.

Vespetro.—The name of a French liqueur, or ratafia, considered useful as a stomachic. The ordinary formula is:—300 grammes of angelica seed, 40 each of fennel and aniseed, and 30 of coriander seed. Macerate for eight days in a litre of brandy and sweeten with syrup made of 2,500 grammes of sugar dissolved in the same weight of water.

Vestas.—See *Wax Matches*.

Vesuvians.—See *Fusees*.

Vetches.—See *Tares*.

Vevey Fins.—A popular kind of cheap cigars made in a town of that name in Switzerland, also in South Germany. It is said they are mostly composed of cabbage and beetroot leaves, soaked in tobacco water, and then dried.

Vichy Water. —The trade name of an alkaline mineral water from several springs in the valley of the Allier, near Vichy, in France. The water is boiled, and sent all over Europe; that bottled at the Grand Grille spring is the kind most frequently met with. It is only used as a beverage, and its principal constituent is carbonate of soda.

It is closely imitated by mixing 10 grs. carbonate of ammonia, 5¼ ozs. bicarbonate of soda, 6 drs. common salt, 25 grs. phosphate of soda, 4 scruples sulphate of soda, and 2 drs. of sulphate of potassa. Add half a gallon of water. Let it stand half a day, and then filter, and charge with 10 gallons of water.

Victoria Wines. — The principal wines produced in Victoria are claret, burgundy, hock, chablis, reisling, shiraz, hermitage, chasselas, sauvignon, tokay, port, and sherry.

Some of these are the blends of two or three kinds of grapes, while others are made from the juice of one grape alone.

The Customs returns for 1895 show exports from Melbourne 16,650 gallons of bottled wines, 345,417 gallons in the wood, and 3,122 gallons of champagne.

Many of the wine growers have taken first prizes at different exhibitions in Europe, and there is a popular training school in viticulture, supported by Government.

"Victorian Raspings (for cooks).— See *Holder's "Victorian" Raspings* (page 463).

Vidonia or **Vidueno.** — A noted dry Canary wine produced in the island of Teneriffe, and formerly very fashionable in England. It is usually of very fair quality, and, like Madeira, it improves by keeping in warm climates.

Vigoral. — An excellent article in liquid form composed of Armour's Extract and pure dessiccated beef. (See *Beef Extracts.*)

Vin Ordinaire.—A low-priced kind of common claret made in France, and mostly consumed by the lower classes. It is usually very sour, weak, and high-coloured.

Vin Regn.—Sole Manufacturers: Liebig's Wine Co., Liverpool and London.

The wonderful popularity of Vin Regno is owing to the sterling quality of the ingredients used in the manufacture, and the fact that the highest medical and scientific authorities in the world, such as Sir Chas. A. Cameron, have analysed, tested, and proved Vin Regno to be one of the most valuable liquid foods in existence.

Vinegar. —Da. *Eddike;* Du. *Azijn;* F. *Vinaigre;* Ger. *Essig;* It. *Aceto;* Per. *Sirka;* Rus. *Ukzus;* Sp. and Port. *Vinagre;* Sw. *Attikä;* W. *Gwinegr.*

Vinegar is perhaps one of the most ancient condiments in the world, and in ages long gone by was a usual article of food. It is referred to as having been in common use in harvest time 3,000 years ago. Moses (Numbers vi., 3) mentions it in the following terms:— "He shall drink no vinegar of wine"— showing that the acetification of wine had been observed by the Israelites. It is mentioned in the Egyptian records as a medicine in the tenth century, B.C.

"At meal time," said Boaz to Ruth, "come thou hither and eat of the bread, and dip thy morsel in the vinegar." It was, mixed with water, the ordinary drink of the Roman soldier when campaigning; and the Eastern slave tempered his mid-day meal of coarse bread or corn by dipping it into vinegar, which in a diluted form was also his ordinary drink.

A sponge of vinegar was offered to Jesus on the cross. *Hippocrates* used it as a medicine, and the alchemists of old were acquainted with the distillation method of obtaining acetic acid from copper acetate. The number of sour acid fluids which pass under this term are now very numerous, and for the typical varieties in general use the reader may refer in this book to:—

Acetic Acid.
Acid Vinegar.
Alegar, or Ale Vinegar.
Aromatic Vinegar
Beet Vinegar.
Cantharides Vinegar.
Caper Vinegar.
Celery Vinegar.
Chili Vinegar.
Cider Vinegar.
Crab Vinegar.
Date Vinegar.
Distilled Vinegar.
Eschalot Vinegar.
Flowers of Vinegar.
Garlic Vinegar.
Glucose Vinegar.
Grain Vinegar.
Horse-radish Vinegar.
Malt Vinegar.
Mint Vinegar.
Mother of Vinegar.
Orleans Vinegar.
Pyroligneous Acid.
Raspberry Vinegar.
Spiced Vinegar.
Spirit Vinegar.
Sugar Vinegar.
Tarragon Vinegar.
Thieves' Vinegar.
Toilet Vinegar.
Vinegar Plant.
White Wine Vinegar.
Wood Vinegar.

Several of the above culinary and fancy vinegars are simply made by steeping

about 1lb. of the fruit, vegetable or other base, in 2 gallons of ordinary vinegar or acid and water for about a fortnight, and then straining or filtering and bottling. Malt vinegar and acid (wood) vinegar are the two sorts most commonly sold in this country, Wine vinegar in France and Germany, and Cider vinegar in America.

Crab-apple vinegar is often made in Wales from the crab-apple.

There has been considerable trouble in England during the last few years in deciding what vinegar really is or should be.

It has been a perpetual puzzle to the magistrates, and the Society of Public Analysts have asked Parliament to settle the question.

The word is clearly of French origin, compounded from *vin* (wine), and *aigre* (sour), thus forming *vinegar;* and this is the sort used in France, where it is manufactured from the dregs of the wine presses. (See *Orleans Vinegar.*)

In England there have been, from time immemorial, processes for making it from apple-juice, from sugar and water, from the "vinegar plant," and more recently from malted grain, wood acid, dates, etc.

Let us show what a few of the leading modern authorities say about it.

In the *British Pharmacopœia* vinegar is defined as "an acid liquid, prepared from a mixture of malted and unmalted grain by the acetous fermentation. The specific gravity is from 1·017 to 1·019, and it is to contain about 5·41 of real acetic acid ($C_2H_4O_2$)," but Professor Attfield, F.R.S., the editor, expressed the opinion that there is no one fluid that can claim the word "vinegar" for a name; that vinegar belongs to a class, and that vinegar prepared from wood can be legitimately called vinegar.

The *Encyclopædia Britannica* states that: "Vinegar is a dilute form of acetic acid, having a flavour that varies according to the source from which it is obtained. . . The nature of the acetous fermentation, and the *rationale* of the processes by which vinegar is prepared, are explained under 'Fermentation'; and the acetic acid obtained by the destructive distillation of wood is dealt with under 'Tar.' Here we have only to do with the various kinds of vinegar used for table, medicinal, and other household purposes."

The *Imperial Dictionary* gives the following definition and description of vinegar:— Dilute and impure acetic acid, obtained by the vinous fermentation. In wine countries it is obtained by the acetous fermentation of inferior wines, but in this country it is usually procured from an infusion of malt which has previously undergone the vinous fermentation. Vinegar may also be obtained from strong beer, by the fermentation of various fruits, or of a solution of sugar mixed with yeast; in short, all liquids which are capable of the vinous fermentation may be made to produce vinegar."

A. H. Allen, in his *Commercial Organic Analysis*, vol. i., says:— "Properly speaking, vinegar is a more or less coloured liquid, consisting essentially of impure dilute acetic acid, obtained by the oxidation of wine, beer, cider, or other alcoholic liquid. Sometimes the term is improperly extended to pyroligneous acid, or 'wood vinegar,' while acetic acid is called 'distilled vinegar.'"

In the first edition of *Watts's Dictionary of Chemistry*, vinegar is classed under the separate heads of "Wine Vinegar," "Malt Vinegar," "Distilled Vinegar," and "Wood Vinegar." In the new edition there is no distinct definition of vinegar, but under the preparation of acetic acid it is shown that the ingredients must have been "under the influence of ferments. This is the ordinary process of making vinegar from alcoholic liquids, wine being generally used for the purpose in France and Germany, and malt in England."

T. E. Thorpe, in his *Dictionary of Applied Chemistry*, vol. i., states that:—"In all processes for the manufacture of vinegar advantage is taken of the oxidising action of the vinegar-fungus already described; the souring of wines and other alcoholic liquids is due to this organism, the germs of which are always

present in the air, and are deposited, and grow in any suitable medium."

Sadtler, in his *Industrial Organic Chemistry*, page 231, says:—"Only such materials will be considered here as give rise to a vinegar by the normal acetic fermentation. The materials referred to as furnishing vinegar under the influence of the acetic fermentation are—first, wine; second, spirits; third, malt wort or beer; fourth, fermented fruit juices other than wine; and fifthly, sugar-beets."

W. T. Branndt, on page 20 of his *Practical Treatise on the Manufacture of Vinegar and Acetates*, writes:—"For consumption on a large scale, especially where only a body of an acid taste is required, the use of so-called 'vinegar essence' (*i.e.*, pure 80 or 90 per cent. acetic acid) prepared from wood, and which, when properly diluted, furnishes ordinary vinegar, will undoubtedly gradually supersede vinegar prepared from alcohol, it being considerably cheaper. And notwithstanding that the price of vinegar essence is decreasing every year, in regions where wood is plentiful and cheap its manufacture is a well-paying industry, on account of the many valuable by-products (tar, wood spirit, charcoal) obtained besides acetic acid. Even at the present time, for all industrial purposes where acetic acid is required—as, for instance, in the manufacture of tar colours—that obtained from wood is used, and the quantities consumed in the fabrication of table vinegar become larger every year. But the manufacture of vinegar from alcohol and alcoholic fluids will nevertheless continue to flourish, because the product obtained from them actually possesses different properties from the pure acetic acid prepared from wood. Vinegar obtained from pure alcohol, and still more so that from fermented fruit juices, as wine, cider, skins of pressed grapes, or from malt, contains besides acetic acid and water, small quantities of bodies which, on account of their being analogous to those occurring in wine, may be designated as 'bouquet-bodies,' and which give to the vinegar an agreeable smell and taste, entirely wanting in acetic acid prepared from wood. These properties are so characteristic that anyone gifted with a sensitive and practised sense of smell can at once distinguish pure acetic acid vinegar from that prepared from wine, cider, beer, etc. By the addition of volatile oils or compound ethers, an agreeable odour can of course be imparted to vinegar obtained by diluting pure wood acetic acid with water, but it is impossible to produce the harmonious bouquet peculiar to vinegar from alcohol or fruit juices, a similar relation existing here as between wine and so-called artificial wine. The latter can be made so as nearly to approach, as regards taste and smell, genuine wine, but a connoisseur will at once detect the difference."

Dr. Blyth, in his book on *Food Analyses*, 4th Edition, p. 581, says:—'Commercial vinegar is a liquid resulting from the acetous fermentation of a vegetable infusion or decoction. It contains acetic acid, acetic ether, alcohol, sugar, gum, extractive matter, alkaline acetates, and tartrates, a variable amount of salts (depending on the substances from which it has been produced), and legally not more than 1·85 parts by weight of pure sulphuric acid per 1,000 of vinegar."

In Spon's *Encyclopædia of the Industrial Arts, Manufactures, and Commercial Products*, page 2038, we read that "the acid contained in vinegar is acetic acid, and it usually exists in the proportion of 3 to 6 per cent. . . . Although the official prescription is adhered to by some manufacturers, the use alone of those ingredients is by no means usual; indeed, malt, in many instances, is not in the present day used at all, but for it are substituted artificial glucose and cane sugar, or molasses. These latter are very largely used, and as they produce, chemically speaking, the same result, *i.e.*, acetic acid obtained by fermentation, there can really be no objection to their use."

The *National Dispensatory* of Stillé and Maisch says:—"Vinegar is a dilute acetic acid, obtained by the acetic fermentation of alcoholic liquids. The

materials from which it is prepared influence its colour, and to a considerable extent also its odour and taste."

Mr. Otto Hehner, the Isle of Wight Analyst, defines vinegar as "a vegetable juice or infusion which has passed through alcoholic acetic fermentation," not necessarily obtained from malt.

"Any fermented fluid which has become acid can lay claim to the name of *vinegar*, whether it be made from malt, spirit, sugar, or wine, and when 'vinegar' only is asked for any acid fluid which complies with these conditions may be supplied."

Indeed, most of the leading analysts seem to regard true vinegar as the product of the alcoholic and acetous fermentation of a vegetable juice or infusion, and this includes all kinds of brewed vinegar, but excludes wood-vinegar, which, of course, has not undergone such fermentation.

As to strength of vinegars, they used to be indicated by numbers 16, 18, 20, 22, and 24, from the fact that each quality required so many grains of crystallised carbonate of soda to neutralise one fluid ounce. As is generally well known, acids (free) decompose and are neutralised by hydrates and carbonates. Thus an ounce of vinegar which only required 16 grains of soda to neutralise it would be defined as No. 16 vinegar. A stronger vinegar, requiring 20 grains of soda to neutralise a fluid ounce, would be called No. 20 vinegar, and so on with the other qualities.

These numbers are still used in the trade, although they have lost most of their significance, and no longer indicate absolute, but relative strengths; the vinegars of different makers bearing the same numbers varying very considerably in the amount of acid contained in them.

The "Diamond" or weakest quality rarely contains less than 2·50 per cent. of acetic acid, and Nos. 22 and 24 are probably the only two that come up to the strength required by the British Pharmacopœia.

In 1874 the Society of Public Analysts, ignoring these old Government denominations, agreed on 3 per cent. as the smallest amount of pure anhydrous or glacial acetic acid that vinegar should contain ($C_2H_4O_2$). This percentage is equal to the 16 vinegar of most makers, while 20 vinegar is equal to perhaps 4½. No. 24, also called "proof" vinegar, is the strongest ordinarily made, containing 5 per cent. of absolute acetic acid, and with a density averaging 1·0085.

It all depends on how much water is used. A retailer may thus see that if he have a strong vinegar he may easily supply a weak one when needed by the addition of water which has been boiled and a little caramel colouring so long as the resulting mixture contains 3 per cent. of acid.

In the United States vinegar must contain not less that 4·6 per cent. of pure acid, Russian 5, Belgian 5·6, German and Austrian 6, and French 8 to 9 per cent. As already shown, the majority of the analysts say that the acetic acid, which is after all the indispensable base of all vinegars, and the only property possessing any hygienic value, should necessarily be obtained by the oxidation of an alcoholic liquid, that is to say, this sour constituent *should be the result of fermentation*, and not mere diluted pyroligneous acid as generated by the burning and distillation of certain woods.

The alcohol for genuine vinegar may be furnished by wine or wine dregs, as in France and Germany, from wort made from mixtures of malt and barley or other grain, as in England, or from cider, as in America; but it must be the *result of fermentation*, *i.e.*, obtained from an alcoholic liquid.

Vinegar so produced is said to contain besides acetic acid certain other ingredients in smaller quantities, which impart pleasant aroma and agreeable taste, rendering it more suitable for dietetic use.

These ingredients are extractive matter—alcohol, acetic ether, sometimes gum and salts, including acetates, phosphates, etc.

Nearly all magistrates agree that to be real vinegar the liquid must result from the conversion of alcohol by oxygen into acetic acid, and should be the indirect result of alcoholic fermentation of saccharine liquid—in other words of the

conversion of the sugar of such liquid into alcohol, and alcohol into acetic acid.

The qualities required in vinegar differ according to the purpose for which it is needed. For ordinary daily use a good, sound, medium strength is required, about 5 per cent. of acid, with good aroma and flavour. *Sour ale or beer* does not make a reliable vinegar, but is very liable to lose its acidity if kept, and to undergo putrid fermentation, which results in a very nasty odour.

The vinegar made from wood acid is not necessarily injurious to health, but must not be sold without a declaration as to its nature, and must not be sold as *malt* vinegar, nor even as "vinegar" simply.

By the "*German process*" of manufacture a large barrel is filled with wood chips, and a little good vinegar poured in, then weak, faulty, or sour wine is run in slowly, and as slowly does the liquid issue as vinegar by a small aperture at the bottom of the barrel. The same chips may be used for a long time after once they get well charged with the vinegar bacteria. This is a very quick method, but it is said the product is only inferior.

In Scotland brown vinegar is not popular. They prefer it colourless, and Glasgow analysts have declared samples distilled from the brown stuff not to be vinegar at all. In one case the difficulty was got over by declaring the product "*White* vinegar distilled from pure malt vinegar," and the Excise authorities agreed. But 90 per cent. of the vinegar used in Scotland is simply acetic acid and water.

Vinegar has a remarkable power of softening and dissolving muscular fibre, and so is of great value in the digestion of hard fibred meats, such as pork, salmon, lobster, eels, sturgeon. It assists also very much in dissolving the albumen of hard-boiled eggs.

Distilled Vinegar, when genuine, is obtained by submitting wine or malt-vinegar to distillation. A colourless liquid results, known chemically as *Acetum dest*, but which is always weaker than the vinegar from which it has been derived. Much of the so-called *distilled* vinegar is simply acetic acid and water, and renders the vendor liable to a fine.

It is high time some definite standard were fixed.

Vinegar, as the derivation of the word implies, was originally *sour wine*, but custom and convenience seem to have sanctioned the extension of the term to sundry other liquids containing acetic acid and obtained from malt, sugar, etc. Hence came the term "Malt" or "Brown Vinegar." Fifty years ago White Wine Vinegar simply meant *sour white wine*, as imported from Cognac, France, while white or wood vinegar (acetic acid and water) was also sold under the name of "white vinegar."

These terms have since become very confusing, and there are many inconsistencies. For example, the Medical Council instructs chemists to mix squill root with dilute acetic acid, and call it "*Vinegar of squills*," and to mix cantharides with strong acetic acid, and call it *Vinegar of Cantharides*.

A very common custom with chemists is to mix acetic acid with spirit and perfumes, and sell it as *Toilet Vinegar*, and to mix very strong acetic acid with essential oils, and sell it as *Aromatic Vinegar*.

Horse Radish Vinegar.—Soak a cupful of freshly grated root, together with an ounce of minced shalots or onions, one clove of garlic and a pinch of red pepper in a quart of cider vinegar. After being kept tightly corked for a week, strain the liquid through a cloth and bottle it for use. It makes a pleasant addition to many salads. (See also p. 474.)

Vinegar is liable to be adulterated with sulphuric acid. This is highly objectionable and illegal, as it is very apt to affect injuriously persons of delicate organisation. The sourness of sulphuric acid is at least four times that of acetic acid of the same strength, and an article having the sourness of vinegar can be made of it at a cost of fifty gallons for one penny.

Until late years vinegar makers were allowed to add a thousandth of its weight of sulphuric acid under the

erroneous impression that it acted as a preservative, but such additions now constitute a legal offence under the Food and Drug Acts.

To Detect Sulphuric Acid in Vinegar.—1. Add a few drops of a solution of chloride of barium, and, if sulphuric acid be present, it will cause a heavy white precipitate; or

2. If one part of sugar in 30 times its weight of water be heated in a cup or jug to about 200° F., the solution should not be materially discoloured when a drop of pure vinegar is poured into it; but a spot of an intensely brown or black colour is formed if the sample contains only 3-100th part of sulphuric acid; if it contains only 1-1,000th part, the spot is olive green; and if a less quantity, then only of a pale green colour.

For aroma, proceed as follows:—Take a small flask, and fill it one-third full of vinegar. Securely cork, and place in a basin of hot water for ten minutes. Uncork, and apply the nose to the neck of the flask. Excess of alcohol will be easily detected by this test. Flavour is best judged by taking a mouthful of the vinegar and agitating, at the same time forcing the breath through the nose at the moment of expectoration. Very dark vinegars often owe their colour to added caramel, which sometimes hides weakness in acetic acid. The public associate strength with colour, but the intelligent grocer can do much to counteract this view, although many grocers believe that a light-coloured vinegar is correspondingly weak. This is not so. The real test of strength is the percentage of acetic acid present, which is a colourless compound.

Test of Strength.—The simplest test for strength is to neutralise a given quantity of vinegar with a solution of caustic soda, and read off the percentage from the tube. The tube is termed an acetometer, and is marked to indicate the amount of vinegar to use, and the strength is indicated by marks and numbers higher up. The test is carried out as follows:—Vinegar is poured in the tube up to the mark. A drop of the indicator is added, which turns a deep red when all the acetic acid is neutralised. The test solution of soda is now run in gently until the liquid in the tube turns a permanent red. The height of the red liquid is then observed and the number nearest the level shows the strength. This is an exceedingly reliable and simple test and can be done in two minutes.

Metallic vessels are very unsuitable for keeping vinegar in, unless perfectly clean copper, enamelled iron, or silver. A painted vessel should never be used for vinegar, because the basis of nearly all pigments is white lead, which readily dissolves in vinegar, thus forming sugar of lead—*lead acetate;* besides, many paints contain copper and other metallic salts, soluble in vinegar, and any of which may prove poisonous. Iron also is easily attacked by vinegar, forming a salt, *iron acetate*, which, although not injurious in small quantity, yet it gives to food a disagreeable taste. Leaden or galvanised vessels are readily attacked or acted upon by the acid, and dangerous.

Common pottery, which is almost always glazed with oxide of lead, is when heated, specially liable to be acted upon, and should never be used.

Vinegar is an excellent remedy for hiccough, one teaspoonful being a sufficient dose for the most violent attack.

Muddy or spoilt vinegar may be advantageously utilised in the manufacture of blacking. Vinegar weighs about 10lbs. 0¼ oz. per gallon, so the contents of a cask may be thus roughly checked by the weighing machine.

Special Firms.—Allen Jeeves & Sons, Seddington, Sandy, Beds; Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool.

Vinegar Eels.—These tiny so-called eels, *Vibreo aceti*, a millimetre or two in length, are often found in weak or impure vinegar. In vinegar made from wine by the quick process they are very rare.

Dr. G. Lindner states that they thrive best on a diet of egg, and can withstand even strong vinegar, but are killed at once by pure acetic acid. They flourish best at temperatures ranging from 60° to 80° F., and are killed by a temperature over 107° F., or one below the freezing point.

These eels or worms, as well as the small flies (*Musca cellaris*), are not exactly dangerous, but it is safer to be sure that the vinegar is of the better sort and free from them, or, at least, to boil and filter it so as to expel them; or, better still, to pass the vinegar through tubes immersed in boiling water.

Vino Greco.—A rich, sweet wine made in Naples from the favourite vine so called, and which is said to have been originally brought from Greece.

Vino Santo.—A full-bodied sweet wine, like Canary, and of prime quality, produced on the shores of the Lake of Garda. It is not extracted from the grapes until Christmas, and is ready for drinking at the following midsummer.

Violets (Candied).—See *Crystallised Fruits*, *Sherbet*, etc.

Violets, Syrup of.—A fancy name for a pleasant medicine formerly used, but now considered of little or no value except as a *placebo*—*i.e.*, an inert drug given to satisfy patients.

Violet Powders—These vary very much in composition and quality. They are, however, not powdered violets, but usually a compound of starch or potato farina, sometimes plain and sometimes with a little scent added.

Plain Violet Powders are not scented at all, but others contain more or less orris powder, essence of bergamot, ambergris, or other scent.

The best are now generally made by thoroughly mixing, say, 25 parts of potato starch, which has been well dried and finely powdered, with 1 part of orris powder, and a few drops of scent such as ambergris or musk. It should finally be passed through a small sieve.

Recipe for a *Perfumed Powder*.—French chalk, 1lb.; powdered orris root, 1½lbs.; corn starch, 5lbs. Mix thoroughly, and perfume with orris oil dissolved in alcohol, if the powdered root does not give enough odour. Mix and sift.

Common sorts are only scented with a little essence of lemon or essence of bergamot, and cases have been discovered where white arsenic was present in fatal quantity.

There have been several prosecutions of chemists and others for selling as violet powder an article made up largely of sulphate of lime, but the cases have always been dismissed, either because violet powder is neither a food nor a drug, or because there is no standard formula for the article.

Gardner's patent "Rapid" Sifter and Mixer, freely used for above. Prices from 50/- to £100. Catalogues from Wm. Gardner & Sons, Engineers, Gloucester.

Violet Soap.—Usually made of palm oil, starch, and a little finely-powdered orris root, and perfumed with violet.

Virol.—The registered name of a new food for infants and invalids.

Vitellin Creme.—This is a very nice cosmetic, and sells well. It is prepared with equal parts of yolk of egg, benzoated olive oil, and alapurin. The yolk of egg remaining from the manufacture of albumen paper is a cheap and ordinary material for the purpose.

Vitriol.—Da. F., Ger., and Sw. *Vitriol*; Du. *Vitriool*; It. *Vitriuolo*; Port. and Sp. *Vitriolo*; Rus. *Kupoross*. (Better known as *Sulphuric Acid*, *Copperas*, etc.)

The word "vitriol" is an old-fashioned term, seldom used now.

It is a compound salt, in several forms: *Green Vitriol*, *Copperas*, or *Green Sulphate of Iron* is the most important, and is composed of iron, sulphur, and oxygen. It is generally of a bright, though not very deep, grass-green colour, and is largely employed in dyeing black, making black ink, etc.

Blue Vitriol, *Blue Copperas*, or *Roman Vitriol* is the sulphate of copper, composed of copper, sulphur, and oxygen. It is used in dyeing, in paints, and medicine; also as a caustic.

White Vitriol, or white copperas, now called zinc sulphate, is made up of zinc sulphur and oxygen, and is used in printing cotton cloths to fasten the

colours. It usually contains a small portion of iron, and often of copper and lead. *Oil of Vitriol*, or *Vitriolic Acid*, is now usually called *Concentrated Sulphuric Acid*. *Vitriol of Mars* is the red sulphate of iron.

Sulphurous acid, by absorbing oxygen, prevents mould and ferments, prevents aerobic organisms from acting, and so retards souring and many changes. It it much used by brewers for casks, and in finings, by makers of lime-juice, liquors, and cordials, bottled beers, bottled fruits, and sometimes by vinegar makers.

Vifda or **Vivda**.—A name in Orkney and the Shetlands for beef or mutton hung and dried without being salted. (See also *Tassajo*, *Biltong*, *Charqui*, etc.)

Vodka.—The Russian name for *Corn Brandy*, and the popular alcoholic beverage of the masses in that Empire.

Vol au Vent.—Ger. *Blatterteigpastete.*

The French name of a popular *entrée*, or made dish. It usually takes the form of a high-standing piece of light and rich puff pastry, perhaps three to twelve inches high, which, after baking, is filled with various delicate ragouts, or fricassees, of either fish, goose-liver, kidney, truffles, mushrooms, cocks' combs, lambs' sweetbreads, or with fruits, fresh or preserved.

Voslauer Wines.—There are three varieties of these popular Austrian wines —*white*, *red*, and *sparkling*. The *red* is a good wine, full-bodied, serviceable, and economical, richer than Bordeaux, and there is no complaint of thinness, coldness, or poverty. The *white* is a sound, clean, amber wine; and *Sparkling* Vöslauer will hold its own against any champagne.

Vostizzas (pr. *vos-tit'-sas*).—See *Currants.*

W

Wafer Biscuits—The word *wafer* is from the Dutch *wafel*, and was originally given to thin cakes made for table. It is now applied to vari thin biscuits, especially those eaten w ices, and to other very thin and fra sorts which are used extensively in Eucharist of the Roman Cath churches. The preference for th biscuits is because they are made sim of flour moistened with water, the i being that no leaven should be in bread used for the Holy Feast.

Waffles (so-called from "wafel," word of Teutonic origin, meaning hon comb).—Da. *Vaffel*; F. *Gauffres*; G. *Waffel*; Port. *Barquilhos*; S *Barquillos.*

An American biscuit, or batter-cal baked in "waffle irons" constructed two flat halves hinged together, one contain the batter and the other to co it.

To make good waffles, take a pint buttermilk, a teaspoonful of soda, o tablespoonful of melted butter and t of sugar, a teacupful of flour, the yolks three or four eggs, and a pinch of sa Beat the whites separately to a st froth, and add them the last thing. Ha the waffle irons well greased and ve hot, pour in the batter, and bake abo two minutes, till brown on both side Serve hot, with butter spread over then

"Walnut" Brand of America Bacon. — (See George Wall & Co Ltd., p. 10.)

Walnut Ketchup.—Usually manu factured from the brine in which gree walnuts, while young and tender, hav been preserved or soaked for some tim previous to pickling. This juicy liquo is merely boiled for about half an hour along with a little ginger, pimento cloves, and long pepper, a like quantity of malt vinegar is added, and it is then finally strained and bottled. A little burnt sugar colouring is generally added also onion or anchovy.

Sometimes ill-shaped, small, o damaged walnuts, either green o pickled, are smashed up and boiled in salt and water for the same purpose.

Mix 3 gallons walnut shell juice, 7lbs. salt, 8oz. each of ginger, shalots, 4oz.

rse-radish and 1 quart anchovies. Boil
d strain.
Of course, ripe and dried walnuts with
rd shells are unsuited for making into
tchup, but *green walnut husks* are
ten used instead of the green walnuts.
few shalots, a little cleaned horse-
dish, and a little liver are often boiled
ong with the walnut liquor, to give
dy and flavour.
The use of iron utensils should be
oided. Iron spoils vinegar.
For superior quality, apply to Charles
ocks & Co., Reading.

Walnut Oil.—The oil expressed
om walnuts is largely used in France
id Switzerland for culinary purposes,
me people preferring it to any other
ind.

Walnuts or **Welsh Nuts.**—Da.
alnöd; Du. *Walnooten;* F. *Noix;*
er. *Walsche Nuss;* Ind. *Ackroot;* It.
oci; Port. *Noz;* Sp. *Nógales, Nuez;*
w. *Valnöt;* W. *Cneuen Ffrengig.*
The well-known sweet-seeded fruit of
ie common English walnut tree,
uglans regia (Royal nut), a native of
ie Caucasus, Persia, and the northern
ountains of India. There are many
inds, both wild and cultivated, some
f them very choice and highly prized for
essert use, others very coarse.
Juglans is a genus of trees consisting
f six species; three are natives of the
United States, viz.: *J. nigra,* or black
alnut; *J. cinerea,* or butternut, and
. fraxinifolia, or ash-leaf walnut.
The other three species are *J. regia,*
"English" or "Persian" walnut; *J.*
terocarpa grows on Mount Caucasus,
nd *J. baccenta* in Jamaica and Spain.
In Persia, the tree comes into bearing
t eight years from the planting of the
eed; in Italy, Spain, and the Island of
Madeira, in about sixteen years; in
France—the Southern part—in eighteen
years; in England, in twenty-four years;
and in California, in eight years, the
same as in Persia.
Those with very thin shells are gene-
rally the best, such as the *Highflyer,*
and are either pickled when green and
tender, before the shell hardens, or else
ripened and dried for table use as
shelled walnuts, while the inferior sorts
are pressed for the oil which they con-
tain, often 50 per cent. This oil is used
for making soap, artists' paints, printing
ink, etc., the solid refuse after pressure
being fed to cattle or poultry. In
Switzerland this caked substance is
called *Pain amer* (bitter bread), and
eaten by the peasantry.
A *walnut wine* is made from the sweet
sap of the walnut tree.
It is a curious fact that strawberries
will not grow under walnut trees, and
it has been averred that the trees thrive
better when the fruit is beaten off with
a long pole or stick instead of being
carefully gathered.
The cultivation of walnuts, like many
other useful products, seems beneath the
notice of English farmers and land-
owners, so that most of the walnuts now
consumed in this country are of foreign
growth. It is true that the fruit requires
warm weather to ripen it, but the trees
grow well in most districts, and large
quantities are required green and un-
ripe for pickling.
Probably the length of time from
planting the trees to receiving a profit is
too long to wait.
After fifteen or twenty years from the
time of planting, the walnut gives only
hopes, so to speak, for its yield is yet so
small that its value can hardly be reck-
oned; it is only from thirty to sixty
years that this tree can offer each year a
product sufficient to increase the income
of the cultivation. It takes a century,
and over, before the wood is good to be
used in the arts.
Walnuts, like many other nuts, will
not bear a long voyage without being
kiln-dried or "sulphured," a process
which preserves them from decay, but
spoils their freshness and much of their
flavour. They are very abundant in
Spain, especially in Cordova, Malaga,
Leon, Huesca, Oviedo, and all along the
Cantabrian coast. Some 250,000
bushels annually reach us from France,
Italy, Austria-Hungary, Belgium, Ger-
many, and Holland.
The French are mostly grown along
the roadsides and hedges in the South
and South-Eastern Departments. Those
grown in Lot are known by that name;

Drome and Isère the "*Grenoble*"; Correze, the "*Marbots*"; Dordogne, the "*Corne*" and "*Brampton*" walnuts. A tree yields from 10 to 230 lbs. nuts yearly, according to size or age. The nuts grow in terminal clusters, and are beaten off the trees late in September or early in October, and stored in lofts for two or three weeks to dry. They are shipped from Bordeaux, Marseilles, and Havre, and before shipment are exposed to sulphur fumes; and this not only preserves the kernel, but cleans the shell. In some parts of France the prisoners are engaged in cracking walnuts and picking out the kernels, which are pressed for oil. This oil is similar in taste, but much cheaper, than olive oil, so it often adulterates the latter.

The peasants also commonly eat the nuts with bread, which they first rub with garlic.

Grenoble growths are of especially fine quality of the soft-shell variety, with white meat, and are fairly uniform in size. Those known as *Noix bijoux* are the finest. They, as well as the *Mammouth* or *Jauge* variety, are very large, and the beautiful shells are often hinged together so as to form small jewel boxes, ladies' companions, etc. Walnut shells are also often ground and used for adulterating pepper and other spices. The poorest quality of French walnuts usually come from Bordeaux, and only fetch half the price of the best.

A "bag" of French walnuts contains 50 kilos, and should weigh 110lbs.

The Italian walnut districts are the Neapolitan provinces around Naples, Castellamare di Stabia, and Sorrento, and the points of export are Naples and Sorrento. The principal growing district is Piassio di Sorrento. Considerable quantities of walnuts are imported from Southern Italy about Christmas time, when the demand is greatest. The tree is grown among the vines and fruit trees, and at twenty years yields about fifty pounds of nuts per annum. The walnut-growing districts of Austria are in the lower part of the Empire, or what is known as "Nieder Oestreich," Steiermark, Mähren, and Bosnia. In Hungary the districts are Nagy, Bànya, and Grosswardein. The Austria-Hungary growths are exported from Trieste. In England the nuts are usually ripe in September, and are either gathered from the ground as they fall or are shaken from the trees.

When ripe and skinned, the kernels are very agreeable eating. If the nuts be fresh, the skins are very bitter, but they lose much of this bitterness if kept for some time. The "hard" shell should, and the soft or "paper" shell *must*, be collected as soon as possible after dropping, as it injures the quality and appearance of the nuts to remain long on the ground and absorb moisture. They are then dried and sacked for market. When the husk enclosing the nut shows no sign of cracking, it is an indication that the nut is yet unripe, and the kernels of such nuts generally shrivel up instead of filling well. These shrivelled nuts are often steeped in water or milk and water for about 24 hours, and then rubbed dry for early use. The husks should, however, be removed from the nut at once, and before storing in heaps. They are often dried by two persons gently shaking them to and fro in a sack, so as not to break the shells, but generally they are spread in a dry, airy room or loft, and turned occasionally.

Walnuts are considered "new" till the end of January. They are a very wholesome fruit while fresh; but, as they contain much oil, this is apt to turn them rancid quickly, and old walnuts are, therefore, generally unwholesome and injurious, causing pyrosis, or water brash, and heaviness in the stomach.

Oily kernels, such as these, cannot be kept in a good condition for eating unless the air be kept from them, the moisture in the nut soon evaporating and the oily constituent of the kernel becoming rancid. The best way for keeping them fresh is to choose a box or barrel of a size suitable to the quantity of nuts to be stored, and having at hand some not very dry sand or charcoal dust, proceed to lay them in the receptacle in alternate layers of sand, etc., and store in a cool place. These may keep good four or five months.

Special Merchants.—Wm. Field & Co., Ltd., 16 High Street, Hull.

Walnuts Pickled.—The best are epared from young walnuts, with the ıter rind on, selected while green and nder, and while a pin may be pushed rough them without feeling any shell, ıt the cheaper qualities are often made ɔm fruits which have grown more or ss hard, shelly, or tough. They are metimes boiled with sugar, and make very tasty confection. The green, ımature nuts for pickling or preserving e generally ready in June.

In factories, the walnuts for pickling ually arrive in hogsheads, preserved in ine. The liquor being utilised for aking into ketchup (see *Walnut etchup*), the fruits themselves are ken singly and pricked with a table rk or other instrument, eight or ten rforations being thus made into each alnut.

They are next spread out in the open r on boards or wooden trays, and ex-ɔsed to the sun or best daylight, and rned over once or twice till they have come black. After this they are im-ersed in vinegar for a short time, and en jarred, or carefully filled into wide-cked bottles, without breaking the uit, and the bottles are finally filled ɔ with spiced vinegar, corked, and cap-ıled. A piece of ginger with a pinch pickling spice is usually placed in the ck of the bottle, so as to make the ckle warm to the taste.

A Spiced Vinegar for Walnuts.—
2 gallons good malt vinegar.
½lb. black peppercorns.
6 ozs. unbleached ginger.
1lb. mustard seed.
2 ozs. cloves.
2 ozs. mace.
2 ozs. garlic bruised.

In one gallon of the vinegar boil the hole of the spices, and, having rained, pour the hot liquor over the alnuts, then boil the remaining gallon f vinegar, and pour it over the spices, tc. These pickles take some little time ɔ mature, and, if three months be al-ɔwed, all the better.

Although walnuts are cultivated far ıore extensively in France, where the ipe and dried walnut is held in the ighest estimation, it is curious that the young *pickled* fruit is not at all appreciated there, whereas in England it is one of our most esteemed condiments.

Special Firm.—Allen Jeeves & Sons, Seddington, Sandy, Beds.

Warner's Safe Cure.—(See also *Patent Medicines.*)—A quack medicine of American origin. A 16 oz. bottle (4/6) contains 315 grains saltpetre (nitre), 1¼ oz. glycerine, ½ oz. burnt sugar or treacle, 2 ozs. rectified spirit, a few drops of oil of wintergreen, a vegetable extract resembling liver-wort, and water. The nitre is the only active ingredient, and its value, say, *one penny*.

Warwickshire Cheese —(See also *Cheese.*)—This county is somewhat noted for its cheese, which mostly goes to London. It is made very much in same way as Cheshire, but not quite so deep a colour, and the salt is usually applied externally.

Wash Leather—Usually made from split sheep-skins treated with oil; sometimes they are alumed or stained buff. (See *Chamois Leather*, p. 204.)

Washed Ginger—See *Spent Ginger.*

Washing Crystals.—A sort of washing powders, usually consisting of crystallised borax and soda. They generally contain about ten equivalents of water, and soon effloresce on exposure to air.

Washing Powders.—F. *Lessives.* These comprise cleansing crystals, dry soaps, extracts of soap, and soap powders. They are generally made up of 90 parts of soda crystals ground to powder, and then mixed with a little powdered soap, and about two parts of either starch powder or borax.

Hager, in *Phar. Centrat alle*, gives the following analyses :—

One so-called "*English Washing Crystal*" is an impure half effloresent crystallised soda, containing a large proportion of sulphate of soda and common salt.

Another is simply a filtered solution of borax and soda.

A "*Patent Washing Powder*" is a

half efflorescent soda, with about 25 per cent. of Glauber's salts.

Another Washing Powder advertised "for the finest white linen" is a powdery mixture of 90 parts of hyposulphite of soda and 2 parts of borax.

The *Harper Twelvetrees Washing and Cleansing Crystals* seem to consist of pure crystallised soda, with 1 or 2 per cent. of borax.

Ward's Wool Washer is a mixture of 90 parts effloresced soda crystals with 10 parts of soap powder.

Hudson's Soap Extract shows a mixture of crystallised soda and soda soap, containing water; or, say, soap 14, anhydrous soda 30, and water 55.

The best of them have soda as their chief basis. Generally, it is reduced to a coarse powder, and stirred up with liquid size or a decoction of linseed, Irish moss, or British gum, after which the compound is dried and finally recrushed and powdered. This powder must be immediately packed tightly and covered up so as to avoid exposure to the air, which would otherwise render it less caustic and less detergent.

Special Firms.—H. May & Co., Ltd. (Manufacturers), Goodinge Road, Islington, London, N.; Morris & Jones, 13 to 19 Sir Thomas Street, Liverpool (also Sole Agents for the "Westminster" Paraffin Dry Soap and "Lawrence's Musk Paraffin"); Paton, Calvert, & Co., Leeds Street, Liverpool. (*Paton's "Clean all" Powder* has the largest sale amongst the principal steamship companies for washing and cleaning paintwork, etc.)

Washing Soda, or Soda Crystals —(See also *Soda*, *Bicarbonate*, and *Carbonate Soda.*)—This is a combination of sodium, oxygen, and carbon, made by dissolving soda ash (see *Carbonate of Soda*) in water, and afterwards evaporating and crystallising it in large iron pans.

It used to be prepared on a large scale in Scotland from seaweed, barilla, etc., and so got the name of "*Scotch Soda.*"

It is very good for cleaning tinware. Rub on briskly with a damp cloth, then wipe dry.

Prior to the days of Washing Sodas, Dry Soaps, etc., the bakers used to sell *ashes* for laundry purposes from the wo they burnt in heating the old-fashion brick ovens.

Watch Oil.—See *Clock Oil*, *Bla fish Oil*, *Old Oil*, *Porpoise Oil*, etc.

Water.—Da. *Vater;* F. *Eau;* *Wasser;* Hin. *Ab;* Port. and Sp. *Agu* Rus. *Voda;* Sw. *Vatten;* W. *Dwfr.*

Water is a compound colourl liquid, but with the lustre of a diamo its chemical symbol being H_2O. weighs about 10lbs. per gallon. Wa is best purified by distillation, but t spoils the taste of it. An apparatus work preparing distilled water in a sh window forms an attractive adverti ment. Filtration through spon earthenware, or sand is more commo resorted to; but the filters require quent cleansings. A few years a filters were made by pressing anim charcoal into blocks, but these w found to be really worse than usele because, instead of sterilising the wat they rather favoured the growth micro-organisms. Even at best, mere filtering does not afford sufficie security against infection. Boiling water before filtering is the most pr ticable method. It precipitates chalk and other salts, and kills most the germs. The numbers said to "slain by drink" are usually limited those who perish from the effects alcohol, but scientists tell us that one of these at least a thousand die fr drinking impure water. It should made a rigid law to boil or otherw sterilise the drinking water in ev household and public place.

Clean ice, when thawed, is equal purity to water that has been distill but all ice for internal uses should artificially prepared from water t roughly sterilised. Sea water freezes about 28°, fresh water at 32°, boils 212° F.

One of the most curious natural phe mena, and which has never as yet b explained by the philosophers, is that reference to the expansion of freez water. The case of water is a singu exception to the natural laws of exp

n by heat and contraction by cold ich apply to all other known liquids. hen water is freezing it contracts in lk down to the point where the mer- ry reaches the reading of 39½° or 7½° ove freezing, from which point it wly expands according to the inten- y of cold. No other liquid is known possess this remarkable property, ex- ɔt that certain metals expand slightly passing from a liquid to a solid state; t if heat be applied to water after it s cooled down to a temperature of ½° (the point where it is ready to gin expanding, should a greater de- e of cold be applied), it will im- diately expand by the universal law. t should we lower the temperature to ?, it will expand by its own special y. Another curious point to be noted e is this: 'hat the amount of expan- n is as great in water lowered from ½° down to 32° as it is in water that -been heated so that the temperature is up from 39½° to 47°. These points certainly odd and worthy of atten- n and experiment.

Lead Pipes and Cisterns.—Water may through a lead pipe without detri- nt, but if allowed to stand in it, or a leaden cistern, for any considerable ie it may become very poisonous.

Water for Tea, Coffee, etc.—All tea l coffee drinkers can tell by their te if the water from which the bever- e is made has not been boiled or has led too much. Either of these con- ions will spoil the flavour of the tliest tea or the best coffee berry, but everyone knows the reason or how avoid the result. The secret is in tting good fresh water into a clean tle already warm, and setting it to l quickly, and then take it right off use in tea, coffee, and other drinks ore it is spoiled. If the water is al- ved to steam and simmer and evapo- e till all the good of the water is in air, and the lime and iron and dregs in the kettle, you must not expect a ll-flavoured cup of tea or coffee.

Most foods contain a surprising ount of water, and, of course, it is a ap adulterant. Butters contain 10 25 per cent., Cream 23 to 41, Drip- ping 10 to 25 per cent., Eggs 72, Fat Beef 55, Fat Pork 45, Fowl 78 per cent., Herring 80 per cent., Lard 2 to 20 per cent., Lean Meat 73 per cent., Milk (pure) 87, Mutton 71, Salmon 64, Skim Milk 90.

Rain or Soft Water is by far the best for watering plants; also for washing clothes, etc.

Hard Water is easily softened by a little carbonate of soda and slaked lime.

For scientific appliances, etc., apply to Mather & Platt, Ltd., Water Experts, Salford.

Water Biscuits.—Thin white biscuits, made with flour, water, and salt, circular in form, and not much unlike American crackers or milk biscuits, but rather thinner. Usual size, 3 inches in diameter, and about 4 to the inch in thickness; weight about 40 to the lb. Each biscuit has twenty-five to thirty small holes pricked right through it, leaving so many minute apertures. An ordinary tin holds about 7lbs. Best makes about 40/- per cwt.

In some districts they are made from *strong* flour, and in others from *soft*. In the West of Scotland, for instance, the old factories use strong flour, while the English factories, and certain Scotch houses which have followed the English style, make them from flours which are moderately soft.

These two kinds of biscuits are different in appearance and taste; the water biscuit made from strong flour springs better, is easier coloured, is flakier in appearance, and more easily broken.

The firms who use softer flour, on the other hand, say that a biscuit is not a water biscuit at all unless it be hard and crisp to the taste—unless, in fact, it offers some resistance to the teeth going through it.

Watercress or **Watergrass.**— F. *Cresson de Fontaine;* G. *Brunnenkresse;* Port. *Grelhoes;* Sp. *Berros;* W. *Berwy'r Dwfr.*

There are two kinds of these creeping aquatic plants, the green and the brown, the latter being generally preferred, and its brown colour is attributed

to the greater amount of iron present in some waters.

The watercress plant belongs to that highly valuable natural order *Cruciferæ*, and is distinguished as *Nasturtium officinale*. They are mostly found in slow running streams or springs, and prefer sandy soils with frequent irrigation.

They are most wholesome salad herbs, very cooling, anti-spasmodic, and promote digestion. The only danger is that the ignorant cress-gatherer may mix them with some sprays of the water-parsnip (*Sium modiflorum*), a plant common in streams, but which is very poisonous in its nature. A little observation will, however, detect the difference between these two plants.

In the watercress the leaf which grows at the end of the leaf stalk is rounder and *larger* than the other leaflets, while in the water-parsnip the leaf-stalk is *smaller* than the rest.

Upwards of 1,000 tons of watercresses are sold in London every year, mostly grown in Middlesex and adjacent counties, where hundreds of acres are cultivated in long, narrow ditches or canals which are irrigated by means of floodgates at the ends. Large quantities also come from Ireland.

Waterglass or **Soluble Glass.**—G. *Wasserglas.*

This rather curious fluid is well known in certain industries, but is not so familiar to the provision dealer as it might be. It is a silicate of soda, or a preparation of silica reduced to a liquid form by boiling it in alkali, either soda or potash. It is called "glass" because of its being an alkaline silicate, and because of its colour, and it is termed *soluble* because it will dissolve in water, or, rather, it will mix with water, very readily. It has for some time been used as a transparent paint or glaze for damp walls, rendering wood fireproof. On application it petrifies, and until cracked or broken up it renders the surface air-tight and damp-proof. It has latterly been found the best preservative for fresh eggs. But some of the water-glass on the market is of a very inferior quality, is strongly alkaline from the presence of free soda or potash, and in such the eggs will not keep well. Th soon take on a disagreeable odour a flavour. Again, some of the water-gl is very thin, and in such cases the p portion used should be somewhat larg None who have tried the method, lowing the instructions given, report failure. (See *Eggs*, p. 350.) As s by alkali manufacturers, wholesale dr gists, etc., it has the appearance of thick, water-white syrup, not unl liquid glucose, and of a density of 1 Tw. Price about 10/- per cwt.

Water Melons.—*F. Melons d'e* G. *Wassermelonen;* Port. and *Sandias.*—(See *Melons, Gourds*, etc. These dark-green cucurbitaceous fru classed as *Citrullus vulgaris*, are of o shape, with white flesh, and are mai imported into this country from Spa France, and the Mediterranean, bu considerable number of Musk mel (*Cucumis melo*) are cultivated here un glass.

They are considered very delicious hot weather, and when amply sliced very acceptable as a cooling refreshm at large parties. The solid matter so slight that it only just serves to c tain the fragrant and sparkling juice the fruit.

Vast quantities are grown in United States, and it is said that by ting the stems long as possible, and t carefully covering the melons with to prevent freezing, they may be sto in fresh condition until Christmas.

Water, or **Trapa Nuts.** — Th nuts, known in India, Central Southern Asia, as Singhara Nuts (*Tr bispinosa, T. natans*, etc.), in South China as Ling Nuts (*Trapa bicorn* are fruits of different species of aquatic plants classed as "Trap They are cultivated on a large scal the lakes and rivers of several countr In Cashmere, immense water areas measured off by the Government, rented at so much per acre, as meth cally as lands, the farmers working f boats. The seeds are sown in la shallow lakes or ponds at the close autumn, and green leaves are soon floating on the top of the water.

ants bear flowers of pure white, and e nuts, of triangular shape, grow nder the water after the flowers decay. hey have a rather bizarre appearance, nd have been likened to a bullock's ead with two horns. They may be ten raw or cooked, or may be dried as to keep many years, and when round to powder make excellent gruel ther with salt and pepper, or with igar, syrup, spices, etc.

The seeds yield a large amount of ecula, and this is often mixed with ordiary flour for making bread, especially n times of failure of the rice crops; but the rice harvest is abundant the nuts re mostly fed to cattle and poultry. In ndia various sweetmeats and the cakes alled "Chuppaties" are all made from he singhara seeds. One variety of apa is cultivated in Italy in the shallow akes of Majena and Varesa, where haplets of beads, necklaces, etc., are nade of the seeds and sold in Rome and ther places. In China the kernels are oasted or boiled like potatoes.

Water Paints.—These are a new preparation, made up in liquid form, and nay be considered a sort of medium beween the distemper wash and oil paint. n their manufacture, gum acacia is dissolved in warm water to form a mucilage thick as treacle. A little powdered borax—say, half an ounce to every quart of mucilage—is then stirred in until the mass becomes a brittle jelly, and so thick that it is difficult to stir. One quart of this jelly size must be immediately diluted with 4 or 6 quarts of warm water. Powdered colours are afterwards mixed in to produce any tint desired. These washes, or "Water paints," have already become very popular in hotels, sea-side lodging-houses, etc., and are very cheap and effective, imitating *al fresco* painting on brickwork, ceilings, stone walls, metal-work, etc. If allowed to dry for a few days after application, they cannot easily be brushed off.

Waterproof Paper—See *Vegetable Parchment* and *Wax Paper*.

Wax.—Da. *Vox*; Du. *Wasch*; F. *Cire*; G. *Wachs*; It., Port., and Sp. *Cera*; Lat. *Viscus*; R. *Vaksa*; Sw. *Vax*; W. *Cwyr*.

Wax is a term applied to many substances having greater or less resemblance to the prototype of the group beeswax, and the reader may refer to the following headings:—*Beeswax*, *Carnauba wax*, *Chinese white wax*, *Cordillera wax*, *Fig-tree wax*, *Indian white wax*, *Japan wax*, *Ozokerit* or *Earth wax*, *Sealing wax*, *Spanish wax*, *Vegetable Tallow*, *White wax*, etc.

Wax for Bottling—A good wax for bottle tops is made by melting common resin in a little oil over a slow fire or gas stove; when melted, add any colour required, and stir well. Dip the bottle neck, when corked, into the pan for an instant, and if on withdrawing it any air bubbles appear over the cork, crack them, and dip again. Keep turning the bottle round till the wax sets, or it will be apt to run down the side of the bottle.

Wax for House Floors—See *Floor Wax*.

Wax Matches, Tapers, Vestas, &c—These are made of various forms, colours, and degrees of thickness, and consist of cotton threads which have been wound on a drum and by the aid of a guard roller passed through a tank or trough containing a molten mixture of stearine, wax, paraffin, etc. From this trough the threads or wick are made to pass rapidly through a hole perforated in an iron plate, the opening of which corresponds to the desired thickness of the match, taper, or vesta required, and finally wound on a second drum—the operation resembling somewhat that of wire-drawing or rope-making. This wick, or taper, is afterwards cut into suitable lengths. For Matches (F. *Allumettes-bougies*), only 4 to 6 cotton threads are necessary, and the usual molten mixture is two parts of stearine with one of vegetable wax or paraffin, and the lengths are cut short. These only then require dipping into the ordinary phosphorous composition, but the stems being less rigid than wooden splints, a larger proportion of phosphorus is added. *Tapers*, *Vestas*, and other

fancies, of course, require a large number of threads, and in some cases a little tallow is put in mixture to give greater flexibility. Where tints are desired, coal-tar or aniline colours, such as red, blue, green, yellow, pink, etc., are also added with a little resin and turpentine. These productions are extensively used in Roman Catholic chapels, also for lighting candles, illuminating Christmas trees, melting sealing-wax for letters, etc. Marseilles is the great centre for their manufacture, and Austria stands next. It is strange, but true, that most of the foreign importations are still much superior as regards uniformity and smartness of finish to any of the British makes.

Wax Paper.—(See also *Vegetable Parchment* and *Paraffined Paper.*)—Made by placing good strong white paper on a hot iron plate, and then spreading over its surface a coating of ozokerit or white wax mixed with turpentine and spermaceti.

It is also made by steeping a thin, loose paper in melted paraffin wax.

Apply to A. Norsworthy & Co., Nottingham. (See adv. page 5).

Wedding Cakes.—See *Bride Cakes.*

Weed Exterminators.—These are mixtures or compounds for the destruction of weeds on lawns, gravel paths, and other places. An excellent one in dry powder form is prepared from the following ingredients:—Jarrow alkali, 1 cwt.; lime, ¼ cwt.; salt, ¾ cwt.; caustic soda, ½ cwt. The whole should be mixed together. In use it simply requires dissolving in hot water, allowed to cool, and then applying to the walks, etc., with an ordinary watering-can.

Weisshier.— A fermented liquor, made in Germany from a mixture of wheat, rye, and water.

Welsh Onions.—A name for the *Allium fistulosum*, native of Siberia. (See also *Leeks*, *Shalots*, etc.)

Welsh Rabbit or **Rare-Bit.**—A jocular name given to a preparation of toasted cheese, which the Welsh profess to make in the greatest perfection. The first name is possibly a corruption of "rare-bit," or "tit-bit," meaning a delicious morsel. The cheese is melted with a little ale and then poured over slices of hot toast. Cream, mustard, or Worcestershire sauce are occasionally added. The name is also sometimes given to cheese toasted, but not entirely melted, and laid on toast.

"Welsh rabbit" is one example of several humorous names applied to special dishes or products peculiar to certain districts:—An *Essex lion* is a calf, a *Field Lane duck* is a baked sheep's head, *Glasgow Magistrates* or *Norfolk capons* are red herrings, *Irish apricots or Munster plums* are potatoes, *Gravesend sweetmeats* are shrimps, etc., etc.

Wenchow Teas.—A variety of Chinese tea grown in Ping-yang and other districts bordering on the Fuhkien province. Most of it was formerly sent to the Hankow or Shanghai markets, where it was refired and prepared for foreign consumption, but during the last three years large quantities have been shipped abroad from Wenchow.

There are now five tea-firing "hongs" established there, and the export of black, green, and unfired in 1895 reached nearly three million pounds, or about double that of 1893. Labour, charcoal, packages, etc., being very cheap at Wenchow, and the tea-growing districts close at hand, also the tea itself of fair quality, the native merchants have been making large profits.

Wensleydale Cheese—(See *Cheese.*)—Professor Long, one of the highest authorities of the day, says that Wensleydale cheese is the best cheese he ever tasted in his life.

They are now made in two shapes, the older and original one being a round and flat little white cheese, say, twelve inches in diameter by three or four inches in thickness, and the other of Stilton shape—weight, from 5 to 10 lbs. each. They are made of new whole milk, produced from cows grazing on the sweet and rich grasses of several of the prettiest little dales in North Yorkshire. The cheeses are put in brine for a week as soon as made. They have a blue mould like Gorgonzola, but are not

otherwise coloured. The quantity made s rather limited, but once tasted by picures, Wensleydale cheese is not ikely soon to be forgotten.

There has long been quite a lively competition among local merchants for the possession of the yearly product, for eventually these noted cheeses often travel very long distances. Indeed, it is probable the modest little Wensleydale is better known in the West End of London than in Leeds, Sheffield, Manchester, and many other towns much nearer its home.

The Wensleydale system of cheese-making seems peculiarly well adapted for small quantities of milk. The rennet is added at 97° F., and causes curdling in about 15 minutes. The curd is cut in about 45 minutes either by hand or by a small wire breaker. The temperature is then restored at the end of breaking by hot whey—old Cheddar fashion. The curd is first put under a pressure of about 7lbs., and increased to 56lbs. Temperature, 82° F. at hooping. It is then removed, crimmed, salted, and replaced. Salt 1 oz. to 3 gallons of milk. Final pressing temperature, 60° F.

West Indian Tea. — A shrubby herb, *Capraria bifolia*, found in tropical America and Africa; also known as *Goat-weed* and *Sweet-weed*. Its leaves are extensively used as tea in the Antilles.

Westphalian Cheese. — This is made in small balls, or rolls, weighing one to two pounds each. It derives its name from Westphalia, a Prussian province, bordering on Hanover, and its peculiar flavour from the curd being allowed to become partially sour, or putrid, before being pressed.

Westphalian Essence. — An artificial preparation for imparting a smoky flavour to meat, fish, etc., by brushing it over them, or adding a little to the brine in which they are pickled.

It is made in different ways:—

1. By dissolving 2ozs. of burnt sugar in a pint of crude or empyreumatic pyroligneous acid, and after standing a week, the clear portion is ready for use.

2. By mixing, say, 5 drachms of creosote in a pint of acetic acid, of the London Pharmacopœia strength.

3. By digesting ¼ oz. Barbadoes tar, and 1oz. each of burnt sugar and common salt, in ¾ pint of strong pickling vinegar, and ¼ pint of port or elder wine.

Westphalian Hams. — G. *Westphälische Schinken.* (See also *Tinned Hams.*)

On the Continent these Prussian hams are esteemed above most others, both for delicacy and for flavour. This excellence of flavour is mainly owing to the acorns on which pigs are fed and the use of juniper berries and branches, and other fragrant woods in smoking the hams.

In the country districts of Westphalia hams are hung along the ceilings of most of the farmhouses, and the fire—which has no chimney—sends up smoke which slowly pervades the hams, and gradually cures them ere it finally escapes at the open door, which latter is ordinarily as high as the ceiling.

The upper parts of many of these dwellings are literally crammed with hams and bacon, the farmers there being very proud of such accumulated wealth.

Large quantities of Westphalian hams are also smoked at Hamburg, in chambers provided in the upper storeys of high buildings. The smoke is conveyed to these chambers through tubes from fires in the basement. The vapour is condensed and the heat absorbed so that the smoke, when it reaches the meat, is dry and cool, and communicates a flavour far superior to that obtainable by the common method.

The above may be termed the old-fashioned right sort of these hams. There is also a special predilection in Westphalia for the raising of the so-called *Ravensberger Kreutzung* (Ravensberg crossbred hogs). They are rather large animals with slender bodies, flat groins, straight snouts, and large heads. A special feature of this race is their very big, overhanging ears. Their skin is white, and covered with straight little bristles. Another but smaller species is also raised in Westphalia which is called

the *Kœnigsberger Landschwein*. This kind, particularly as far as hams are concerned, is not in great favour. Their flesh is not so substantial as that of the first-named breed. In comparison with the Ravensberg hog their rind is thick and leathery. These pigs are distinguishable by the short, compact frame of their bodies. The head is short, with straight snout; ears are small and upright. Unlike the Ravensberg sort, this hog has a body almost like a roller, resting upon very short and thin legs. The skin is dark coloured, the hair not straight.

But the feeding of the pigs with acorns, though very much in vogue in some districts of Westphalia, is not everywhere practicable on account of the inability of the oak woods to produce anything like the amount of mast food wanted.

Not only pigs, but oxen are passionately fond of acorns, and in abundant years there are many fatalities among the latter in the New Forest.

Some are of opinion that there exists an irritating poison, others lean to the over-feeding and consequent loss of cud. Be this as it may, death occurs. Pigs do not suffer, and are allowed to roam at large throughout the "masting" months with excellent and profitable results. This masting of pigs is one of the oldest of the forest rights; a right, however, always exercised under some official control. In the *silvæ prohibitæ* swine were permitted to roam the woods when the mast was good by summons of the burgesses, and on the payment of pannage to the king. In Nesbit's *Our Forests and Woodlands* is a quaint passage on this point:—"Gif it happens that there be great abundance of akecornes within the King's Forest, the Forester sall summon the Burgesses and Landwardmen; that they bring their swine; to the effect, that the king may have his pannage for them. And this is the forme and manner of the pannage; for ilk *cyndire*, that is, for ilk ten swine, the king shall have the best swine; and the Forester ane hog."

Feeding in the piggery is, however, very customary nowadays, and the principal swine food in Westphalia is really made up of small cooked potatoes, bran, rye, barley, oatmeal, mixed with raw sliced cabbages, and the animals are kept perfectly clean and warm. In large curing establishments the hams are first vigorously rubbed with saltpetre and then with salt. In order to prevent their spoiling, as many cuts as can be prudently made are made near the bone and strewn with saltpetre and salt. The hams thus cured are pressed in a pickle-tun and entirely covered with cold salt lye. According to their size, hams should remain in salt from three to five weeks. After this they are taken out of the pickle and hung up in a shady, but dry and airy, place in order to become "air-dry." Before the pickled hams can be put in smoke it is absolutely necessary that they be first exposed for several weeks to the drying in the open air in the way just mentioned. As long as the outside of the ham is not absolutely dry, as long as it appears moist or sticky, it must be kept away from smoke. Only entirely air-dry pieces must be subjected to this way of conservation. Smoking is done in special large chambers, the hams being hung up on the ceiling. On the floor of the smoking-room a suitable quantity of sawdust, wood shavings, and, if possible, an addition of juniper bunches, is slowly charred. Besides juniper, beech and alder woods are used. Oak and resinous woods are to be avoided. The smoking should go on very slowly. It is recommended to smoke for a few days cautiously—that is, to have the smoke not too strong, then to expose the hams for a few days in the fresh air, repeating this way until they have become sufficiently brown. Hams should be actually in smoke two or three weeks, and thus the whole process of smoking will take about six weeks. In Westphalia much value is set upon dry hams. They are therefore preserved after their smoking in a room which is shady, not accessible to the light, but at the same time dry, cool, and airy. (See also *Karlstader Hams*, p. 856.)

Westphalian Sausages—Generally made of pork—fat and lean—chopped to

about the size of peas, with half an ounce of seasoning for each pound of sausages. The seasoning should consist of about 24 parts salt, 4 parts ground black pepper, and half a pint of bruised garlic, all well mixed together. After being filled into pig-skins, the sausages are usually smoked for about a week.

Whale Oil.—(See also *Train Oil*, *Sperm Oil*, etc.)—Obtained by cutting up and draining whale blubber. This blubber, or cellular membrane, of the whale is from 8in. to 20in. thick, and is found in vast cavities between the skin and the flesh situate in the top part of the front of the head.

The crude oil so obtained is afterwards heated to make the coarser parts settle (see *Spermaceti*), and after it has been thus freed of its solid properties it is re-cooled and stored in casks.

As much as 20 or 30 tons of blubber is often found in a single carcase, and each ton will yield about 200 gallons of oil. Sometimes whale oil is obtained by boiling the blubber in water, and skimming off the oil from the surface.

Apply to C. Windschuegl & Co., 1 Leadenhall Street, London, E.C.

Wheat.—Da. *Hvede*; Du. *Tarwe*; F. *Froment*, or *Blé*; Ger. *Weizen*; It. *Formento*; Lat. *Triticum Vulgare*; Per. *Gundum*; Pol. *Pszenica*; Port. and Sp. Trigo; Rus. *Pschenzia*; Sw. *Hvete*; W. *Givenith*.

This is one of the most valuable of all the cereal grains. It is raised in almost every part of the temperate zones, and in some places grows as high as 2,000 feet above sea-level. It is not known from what country it was first derived, and is unknown in a wild state, but like oats and barley has doubtless been greatly altered and improved by cultivation.

As with most other plants and fruits, there are numerous varieties of wheat—about 150 altogether—although the difference between some of them is very slight. The chief varieties are the *red* and the *white*. The white is the larger grain, but the red is the hardest and most useful. *Spring or summer wheat* (*Triticum æstivum*) is so called from being sown in the spring and cut in the autumn of the same year. *Winter*, or ordinary wheat (*T. hybernum*) is that sown late in the autumn, and matures early in the following autumn. Winter wheat used to be generally preferred, but latterly spring wheat is considered equally valuable. *Bearded wheat* is a variety bearing an awn similar to barley.

The flour obtained from wheat is more nutritious, weight for weight, than that of either barley, oats, or rye. The richer elements of the grain lie near the skin; and although the inner portion is the whitest, and nearest to pure starch, it is inferior in nutritive value.

The average percentages in composition of wheat from 250 analyses are water 13.56, nitrogenous substances (gluten, etc.), 12.42, fat 1.70, sugar 1.44, gum and dextrine 2.38, starch 64.07, fibre 2.66, ash 1.79. The above do not include Russian wheats, but in the central parts of South Russia a wheat is grown which has the remarkable average of 25 per cent of nitrogen and nitrogenous substances. A noted red winter wheat of Russia, and known as the *Builova*, is now being successfully grown in Kansas, U.S.A. The chief preparations from wheat are described elsewhere under *Flour*, *Whole Meal*, *Bran*, *Pollards*, *Sharps*, *Italian Paste*, *Bread*, *Biscuits*, *Starch*, *Gluten*, *Breakfast Cereals*, *Prepared Foods*, *Fermenty*, etc.

Until about 50 years ago England depended almost entirely on her own fields for the supply of this most important grain, and a good or a bad harvest was of vital importance to everyone in the country; but not so now, the offer of a very little extra price will attract to this country any amount of excellent wheat and flour from all quarters of the world. We now import five times more than we grow. The chief countries producing a surplus of wheat are the United States, Canada, Chili, Argentina, Russia, Hungary, Egypt, Northern India, Roumania, and Turkey. The Indian growth is too dry and ricey to be used alone in bread

making, and requires mixing with other softer wheats. It is, however, very suitable for pastes, such as Macaroni, etc. Little wheat is consumed in India, less than a bushel per head annually, the "staff of life" there being millet and pulse, and the wheats are usually loaded with dirt, and other seeds, notably the objectionable *Lathyrus sativus*. Argentina sometimes exports 60 to 65 million bushels, and has now an important influence in the European markets.

The cultivation of wheat in England is rapidly declining, because the heavy rents of the land have rendered it an unprofitable enterprise, and what is grown is almost a drug in the market. In fact it is said to be impossible for the British farmers now to grow wheat except at a loss. A four quarter crop leaves no profit behind it. As indicating how very much more we Britishers now depend on foreign supplies than at any time before the Crimean War, statistics show:—

The constant requirement of wheat for the world is now from 2,500 to 2,600 million bushels each year. During the past five years the annual average production has been slightly over this figure, but not much, the actual total yield each year having been:—

Year.	Bushels.
1896	2,506,320,000
1897	2,234,461,000
1898	2,942,437,000
1899	2,768,295,000
1900	2,586,025,000
Total	13,037,540,000
Highest annual production	2,942,439,000
Lowest annual production	2,234,461,000
Range in five years	707,978,000

The U.K. consumes 5·9 bushels per annum per head; France, 8·1; Germany, 3·0; Russia, 2·1; Austria, 2·9; Italy, 5·4; Spain and Portugal, 6·4; Belgium and Holland, 5·0; Scandinavia, 1·4; Turkey, 6·1 United States, 5·0; Canada, 6·5 Australasia, 6·5. Western Australia consumes 9·3 bushels, and thus out does France, which stands, otherwise at the top of the bread-eating people of the world.

During the past five years the proportions of the wheat crop raised on each continent have been as follow:-

Continents.	1900. P.ct.	1899. P.ct.	1898. P.ct.	1897. P.ct.	18 P.
Europe	57.05	54.98	54.51	51.79	60
North America	22.50	22.37	25.56	26.67	19
South America	4.65	4.52	2.37	1.77	2
Asia	12.11	14.57	14.82	16.78	15
Africa	1.75	1.53	1.65	1.75	1
Australasia	1.94	2.03	1.19	1.24	1
	100.00	100.00	100.00	100.00	100

The price of wheat is made not in the markets of one country or of one continent, but in the markets of the world, and the "sentiment" which is so often spoken of as making the price of wheat is, after all, nothing more nor less than constantly varying differences of opinion as to what the supply and demand, in all the complexity of their relations, are, or are likely to be, throughout the world.

In France one acre of wheat is grown to every eight of area, and the rate would give in the British Isles about 9½ millions of acres.

Nearly every old parish church in England has its record of the doles of bread charitably bequeathed by long departed philanthropists in the hard old times, but probably the greatest benefactor the poor ever had as regards bread was Cyrus H. McCormack, a true and noble Christian man, who invented the *reaping machine*. His name may be unknown to millions, but it has undoubtedly been mainly through his patient thought and labour that wheat growing has been made a practicable industry in the remote regions, and bread everywhere cheap and plentiful. Pauperism and crime have also decreased in this country just in proportion as bread has grown cheaper. It has been calculated that the total saving by the use of machine

n each year on American farms would more than pay the National Debt of Great Britain.

English millers prefer the *drier foreign wheats*, and will give more money for them, English wheats, owing to the large amount of natural moisture they contain, not being so suitable for storing. Between September and January much of the English wheat marketed is sold in a soft and unfit state. This is specially the case also with wheat grown in the North of Ireland and in Western Scotland.

There would be little difficulty in increasing its value 2s. per quarter by drying it ready for milling. The cost of a drying structure is rather heavy, and the loss in weight might be considerable, but ordinary farm hands could easily carry out the operation. Most of the foreign growths keep well, although their intrinsic values may be inferior, being hard and dry; but what is of more importance to millers and bakers, the foreign wheat will, on arrival in this country, absorb a large amount of water in manufacture. A sack of flour made from Dakota wheat for instance will absorb as much as 72 quarts of water, and a sack of Minneapolis flour 64.

The *steel roller mills* now everywhere introduced also operate against English wheat. They are the best for the hard dry foreign wheats, but not so good as the old-fashioned stone rollers for the soft English growths. Hence roller mill owners avoid the latter. Wheat is sometimes sold according to its "natural" weight per bushel, and is sometimes made up to specific weights according to market custom. Other conditions equal, the heavier the wheat per bushel the better the quality.

Wheat Biscuits. — An ordinary mixing for these is:—28lb. good soft flour, 28lb. wheatmeal, 9lb. caster sugar, 3lb. each of butter and lard, 5oz. bi-carbonate of soda, 2oz. tartaric acid, and 7 quarts of milk.

Whelks.—F. *Coquilles.*

These are a kind of single-shelled fish consumed mostly by the poor. They are a larger species of periwinkle, and are prepared by simply boiling in their own liquor, and are eaten with pepper and vinegar. The small ones are eaten like periwinkles, but the larger ones are often removed from the shell and fried. These mollusks are usually sold by measure, and count about 112 to the peck.

Whetstone. –See *Hones.*

Whey. –F. *Petit lait* (see *Milk*).

Whisky.—F. *Usqueba;* Ir *Usquebaugh;* Lat. *Aqua vitae;* Rus. *Vodka* (sometimes called *Potteen, Mountain Dew,* etc.).—Whisky (or whiskey), a corruption of *Usquebaugh,* from the Gaelic word *uisge* (water), is a popular liquor, produced generally by distillation from the fermented wort of either barley, oats, or other grain; but inferior kinds are obtained from molasses beetroot, potatoes, etc. Whiskies are also made up of methylated spirit, and treated with animal charcoal in order to render them more palatable, so as to be palmed off as high class.

The knowledge of whisky was first acquired in Europe during the reign of Henry II., and in Ireland before England.

In the United States it is commonly made from either Indian corn, as in the *Corn Whisky,* of Cincinnati, or from rye, as in *Rye Whisky,* and the name *Wheat Whisky,* has been applied to certain brands.

Immense quantities are made in America, the Peach whisky, the Monongahela whisky of Pennsylvania, and that from Bowibon County, Kentucky, being accounted the best, but most of the others are cheap, hot, fiery concoctions.

The finest whisky, however, is that made from barley. It is the national drink of the Irish and the Scotch, and is regarded as less harmful than any other spirits.

The growth of whisky-drinking in England has been extraordinary, and points to a great change in the habits of the people. In 1898 it was double

what it was in 1889, and the increase has since been steady and continuous. Judging by statements that have appeared people think that there has in recent years been only a change in taste, that Scotch whisky was substituted for Irish. While that may be partially true the fact remains that there has been a steady growth in the consumption of Irish spirits in England, and Ireland sends more whisky to this country now than ever she sent at any previous time. The imports have not increased so rapidly as those from Scotland, but they are over a million and a-quarter gallons annually above what they were ten years ago. The following table will show the extent to which the appetite for "Usquebaugh" has developed in the last decade. It gives the imports in gallons into England from Scotland and Ireland, and the increase will be seen to be extraordinary.

Year	Imported from Ireland	Imported from Scotland
1889 ...	2,216,326 ...	2,763,932
1890 ...	2,385,525 ...	2,982,040
1891 ...	2,472,978 ...	3,376,862
1892 ...	2,675,477 ...	3,779,423
1893 ...	3,072,076 ...	4,329,159
1894 ...	3,091,196 ...	4,580,903
1895 ...	3,017,687 ...	4,775,491
1896 ...	3,182,126 ...	5,229,169
1897 ...	3,362,215 ...	5,711,141
1898 ...	3,488,901 ...	6,112,235

From this it will be seen that while the total imports in 1889 were 4,980,258 gallons, in 1898 they reached no less than 9,601,136 gallons, or practically double what they were ten years ago. The consumption of Irish whisky increased by 1¼ million gallons, while the increased consignment of Scotch was nearly 3½ million gallons. A singular fact, and one that is occasionally lost sight of, is that there is considerable trade in whisky between Ireland and Scotland. Ireland sends to Scotland a great and increasing quantity of spirits. It cannot be that Scotsmen prefer "Usquebaugh" to "Mountain Dew," but the 600,000 gallons which they buy from Ireland must be disposed of somehow. There is some Scotch whisky sent to Ireland, but the quantity is small; last year it only amounted to 22,000 gallons.

As to the more general consumption of Scotch as compared with Irish whisky in England several causes are assigned. The chief of these is the superior energy with which the Scotch manufacturers pushed their goods. Formerly Irish whisky held the lead, but the Irish distillers were inclined to take things easy, and the keen Scotchmen soon cut into their trade. Then, again, it was said that there was a change in the public taste, but the probabilities are that, with the brisk demand, too new whisky was sold, and people ceased to care for it, and preferred the better matured Scotch. The increased sale of Irish whisky would seem to indicate that a somewhat similar change is now about to begin with regard to the favourite Scotch. The Irish distilleries and bonded warehouses hold great stocks of whisky, which many people fancy is better matured than some of that exported from Scotland.

As to the respective merits of Scotch and Irish whisky, the best guide is the taste of the individual. The great distinction between the two spirits is that Irish is what is known as a "self" whisky, whilst Scotch is a blended whisky. That is, the Scotch distiller or merchant obtains, by the mixing of different qualities together, the same object as is achieved by the Irish distiller in the process of manufacture. There are two kinds of spirit, "pot" and "patent," which are very different in cost and quality. The first-named is the natural whisky made from pure malt or malt and raw grain. The patent whisky is pure alcohol without what distillers call "body or flavour." It can be made from the cheapest raw grain, and Indian corn is largely used in its production. In Scotland the "pot" distillers are nearly all devoted to the production of pure malt whisky, very "thick" and full flavoured. This goes to the blenders, who mix it with the "patent" or "grain" whisky to produce the spirit as sold to the consumer. In Ireland there are very few

pure malt distilleries; a proportion of raw grain is mixed with the malt in the mash tun, and the spirit distilled from this mixture is what is termed a "self" whisky—that is, a whisky which can be sold without any blending with the product of other "stills," and only requires maturing and the addition of water to fit it for consumption. Irish whisky will not bear much blending with "patent" whisky, which is a disadvantage from the point of cost, as patent whisky can be produced at about one-third the cost of "pot" spirit. Therefore, the Scotch system of blending patent whisky with heavy Highland malt whisky enables a higher profit to be made than is possible under the Irish system of distilling "self" whiskies. It is difficult to say which system produces the most wholesome spirit, but there is a growing body of opinion in favour of "self" whisky as being more palatable and easy of digestion. The Irish manufacturers stick persistently to the making of the latter, and the great producers, such as the Dublin whisky distillers, only make a spirit that can be sold without blending.

The peculiarity of the Scotch whisky trade which led up to the recent crisis is the keeping of the liquor for a more or less long period in order that it may mature. No other liquor trade is conducted on the same principles. It is for the purpose of improving the spirit by keeping that men have gone on piling up the quantity in bond. "Improvement" is really an open question, for, as is well known, most of the whisky that has been kept for years undergoes a blending process before reaching the market, the result of which is to lower its age very considerably. As far as ageing goes, whisky is exactly in the same position as wine, rum, and brandy; yet there is no tendency to vastly increase the quantity of these liquors in bond. Even the proportion of Irish whisky in bond remains steady and relatively low, and the manufacture has kept clear of speculative expansion. In 1897 the consumption was ten million gallons and the production 14½ million, while Scotland, with its sale of 12½ millions, was turning out over 33 million gallons. The Irish reserve keeps at about 36 millions, or over three years' supply. Some idea of the financial possibilities of the situation in Scotland is supplied by the fact that the value of the reserve here is set down at 14 millions sterling taking the liquor at 3s. 3d. per gallon as a minimum.

The peculiar smoky flavour, different in each country, is attributed to traces of creosote, which it acquires either from the moss, or bog water, or smoke (peat-reek) from the Irish turf or Scotch peat fires with which the kilns are heated and the grain dried, the latter being purposely left to burn a little.

Irish whiskies are also usually distilled from malt mixed with raw grain, but in Scotland from malt mash only. The main distinction betwen Highland and Lowland whiskies rests in the method of drying the malt, and in the number of distillations or rectifications the spirits undergo. Another feature in making Highland whiskies is the use of pure running water, known as "moss water," possessing a slight brownish tinge, very soft, but almost entirely free from organic or mineral impurities. In the Lowlands the barley is generally a mixture of foreign and home grown

One brand of Scotch whisky, known as *Caol Ila*, possesses the peaty flavour to such a degree as to be almost unpalatable to most people, yet it brings a high price from connoisseurs, and especially from other whisky makers who prepare coarser grain spirit in imitation of Scotch, and who use a little of this Caol Ila to give flavour to their factitious productions.

Irish whiskies are often fabricated or adulterated in a similar way. Large quantities of so-called whiskies, as well as other spirits, are produced from what is known as *Silent Spirit*, a flavourless and colourless kind of alcohol, obtainable by means of a newly invented "patent still," from any fermented substance — even spoiled and waste materials. Colour and flavour in the form of, say, a little caramel, pine-apple essence, or of a "maturing wine," are added to this spirit by the rectifier, to imitate the whisky, gin, rum, brandy, or other article required.

Pot-Still Whisky is a name denoting new whisky, which is impregnated with more or less of fusel oil, and in this stage it is commonly treated with so-called improvers, such as Hambro' sherry, prime wine, etc.

The chief flavouring bodies in whisky are traces of ethylic and amylic esters. Hydrogen peroxide is said to have the property of rapidly "maturing" new whisky.

A new method also of "maturing" such productions is by subjecting them to the action of compressed air confined in a close chamber. In twenty-four hours new spirits are thus given the mellowness and character of ten years' age.

Guaiacum gum resin is sometimes dissolved in spirit to impart a strong fiery taste.

Whisky (like brandy and rum) must not be sold weaker than 25° under proof without a special declaration of the strength.

Genuine whisky improves greatly with keeping, and is often put in sherry casks, where it gradually obtains a softness and mellowness of flavour as well as a fine rich colour. If whisky becomes thick or cloudy it should be put through paper pulp filters, and not, as is often done, refined and matured by chemicals. Spanish clay is, however, considered an excellent fining.

Those especially interested in the wine, spirit, and beer trades will find much valuable information from time to time in the *Whisky Trade Review*, published at 69 Lower Gardiner Street, Dublin.

Whisky Cocktail.—An American fancy drink made of whisky and water, sweetened with sugar, and flavoured with bitters or with orange or lemon peel.

White Ale.—See *Devonshire White Ale.*

White Boot Dressing.—See *Liquid Polishes.*

White Currants.—F. *Groseilles Blanches;* G. *Weisse Johannis beeren.*

These are really the same species as *Red* currants (var. *album*), and merely changed in colour by means of cultivation, as *Yellow* currants are produced from the black variety. 'White Dutch" is a favourite and very prolific variety; next comes the "*Wilmott.*"

But white currants must be very fine to fetch good prices, and not many are wanted, save for dessert purposes. The berries will keep on the trees for about two months, Red will hang till November, but Black must be gathered immediately they are ripe.

White Goalin.—A farinaceous plant, native of China, and said to have been cultivated there long before rice was introduced. It will grow in the poorest soil, and in almost any climate, remaining in the ground till late in the autumn. Mixed with other cereals it forms a very nutritious and cheap food.

White Lead.—Da. *Blyhvidt;* Du. *Loodwit,* or *Witlood;* F. *Céruse,* or *Blanc de Plomb;* G. *Bleiweiss;* It. *Biacca, Cerussa;* Port. *Alvaiade;* Sp. *Cal de plomo;* Sw. *Blyhvitt;* Rus. *Byelila;* W. *Gwynrwd Plwm.*

A carbonate of lead, much used in painting. It is made by various processes, which all, however, depend upon the same principle, namely, the formation of some basic salt of lead, which is finally decomposed by carbon dioxide. The lead salt generally employed is the basic acetate, from which it may be made either slowly according to the Dutch method, namely, exposing grated sheets of lead to the fumes of an acid, usually vinegar, and suspending them in the air until the surface corrodes and becomes encrusted with a white coat, of *white lead*; or

It may be made more rapidly by passing a current of carbon dioxide gas through a solution of basic lead acetate, but the product of this reaction does not possess the pigment qualities of the slower make.

The best and purest qualities are made from "soft" refined lead in pigs. English is considered superior to all others, but too high in price.

A new method of white lead manufacture, which bids fair to do away with the dangers usually attending the process, has been invented in France. It consists in dissolving litharge, which is not dangerous to health in its preparation, in a hot ammoniacal solution of Rochelle salt (double tartrate of sodium and potassium). Carbonic acid gas is then passed into the solution, whereupon Rochelle salt remains in solution, ready to dissolve a fresh quantity of litharge, and the white lead is formed as a precipitate. It is claimed for this process that the white lead produced by means of it is equal to any white lead at present on the market, and is, in fact, superior to the majority of the brands of that article.

White lead is often adulterated—especially the foreign—with cheaper substances such as sulphate of baryta, chalk, etc., to the extent of 10 to 30 per cent., and probably nine-tenths of all the adulterations in white lead is composed of barytes.

Patent white leads are usually mixtures of sulphate of lead, barytes, oxide of zinc, etc. As they are rather cheaper than genuine white lead, they are often substituted for it. Those which take the least oil, settle out least on standing, and have least action on the oil, are the best to use.

To remedy the illegal and dishonest practice of selling reduced or mixed white lead as "Genuine," the leading white lead corroders in August, 1896, decided :—

1. To discontinue the use of the term "Best" as a trade description for admixtures of white lead, believing it to be a false and misleading description within the meaning of the Merchandise Marks Acts, 1887 and 1891;

2. To brand or stencil all packages, wooden or iron, containing white lead admixtures with the word "Reduced"; and

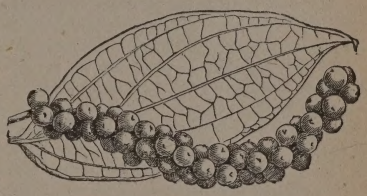
3. To invoice all white lead admixtures as "Reduced White Lead."

These measures were proposed in the interests of the reputation of English trade.

A simple test for white lead is to brush a little in coarse paper, then fold and burn, holding it over the top of a plate. If good, bright grains of lead will drop, but if inferior the particles will be yellowish and flat.

White of Eggs.—See *Albumen*, and *Eggs* (*White of*).

White Pepper.—F. *Poivre Blanc.* —(See also *Pepper*, *Black Pepper*, *Poivrette*, etc.).



PEPPER PLANT

White pepper is from the same creeping plant as *black* pepper, only that the fruits or corns are left longer to ripen, and after being soaked in lime water are then rubbed and deprived of the stalks and outer pulpy skin, or husks; after this decortication, as it is called, the greyish-white seeds, or corns, are re-dried in the sun. It is, however, only the finest corns that will bear this process. In some places the husk, or pericarp, is removed by soaking in running water for five or six days, the ferments thus becoming active, the pulp gradually softens so that it is effectually washed away, and in this process with the subsequent drying much of the spicy aroma and volatile oil which is retained in black pepper.

The active properties of the spice depend upon the presence of an acrid resin, a volatile oil, and a crystallizable substance called piperine or piperin. The latter is said to have no colour, flavour, or smell, and to consist of piperic acid and a liquid colourless alkaloid known as piperidin, which boils at 106° C., and then smells of pepper and ammonia. The resin is very acrid, and the oil has the smell and taste of pepper.

White has really only about a quarter of the strength of pure *black*

pepper, while it is nearly destitute of the fine aroma of the latter. It also contains but a mere trace of *piperine*, the most valuable constituent of genuine black pepper. The popularity of white over the dark is a glaring instance of the absurd sacrifices made to please the eye. It is now manipulated in a similar way from black pepper-corns after arriving in England, by decorticating, removing, or bleaching the outer dark covering. White pepper is therefore much milder than black (1) because it is allowed to ripen, and loses most of its pungency; and (2) because it is deprived of the skin which contains much of the same quality.

The so-called "Singapore" white, as shipped from that port, is made from the fully ripened berries as cultivated in the neighboring islands, and the hull, or husk, is removed in Singapore by hand and friction before the berries are fully dried. So-called "Penang" white, as shipped from there, is made from the black berries really grown in Sumatra, but imported into the Island of Penang in a dried condition. There the berries are soaked in lime and water for some weeks, until the hull is soft, when it is removed by rubbing and washing, by both feet and hands, and is finally slightly coated with lime before shipment.

A large business was attempted in this way, but as it has not been found very profitable, very little is now done in Penang in thus preparing white pepper from these immature or darker corns.

Siam White is manufactured on much the same lines as Singapore, and from black berries grown in Siam.

A large quantity of hulls and broken berries may and do accumulate, and they are shipped from the East in considerable quantities to the consuming markets during each season.

In England it is illegal to sell this ground husk as pepper, and retailers are now heavily fined if their pepper contains even 5 per cent. of husk in excess of the normal proportion.

In Europe also a certain quantity of the finest grade of white pepper has for years been made by hulling the Singapore and Penang black peppers, shipped in a perfectly dried state, by soaking and with the aid of decorticating machinery.

Pepper berries left on the vines till over-ripe lose their hull entirely by a natural course of decay (or decortication) and become actually white pepper, which, after all, is simply the kernel of the black berry.

The finest white pepper is produced in Tellicherry, but the largest quantity is prepared in the Straits, and China is probably the greatest market for it.

Large quantities are grown in the numerous pepper gardens of Sarawak.

Ground white pepper has always been subjected to more or less adulteration with such things as linseed meal, flour, mustard husks, ground olive stones, or the debris of olives after expressure of the oil, walnut shell, refuse shavings in making white bone buttons, earth-nut shells, ground rice, ground long pepper, sand, powdered clay, French chalk, exhausted anise, fennel and coriander seed, excess of ground husks, already above referred to, and the low-priced qualities are often heavily coloured with turmeric to give them a yellow hue. Ginger fibre or spent ginger, with the active properties previously extracted in gingerbeer manufacture, used to be redried, ground up, and mixed with pepper. No sooner is one adulterant discovered than another is invented. To detect colouring, place a little of the suspected pepper in water, keeping it there several days. If the water becomes thick or turbid, it shows that the pepper has been dyed, but if it remains clear it is evident no turmeric or colouring matter has been added. Another way is to keep the "dyed" sample in stock for a time, when it will begin to lose its bright canary colour, and recover its natural dark hue or complexion. A leading public analyst states that no genuine white pepper contains more than 2.75 per cent. of ash, and that when found with more than 3 per cent. it should be condemned as adulterated.

For genuine pepper apply to Hedley Gamble & Crosfield (grinders), Circus Street, Liverpool; W. & D. Harvest,

Dowgate Dock, London, E.C.; Keen & Co., Garlick Hill, London, E.C.

White Shoe Dressing—See p. 544

White Soda Soap—This is the very purest Castile soap and caustic soda, with either olive or almond oil. It is used for making into pills of a mild aperient, antacid action, and is an antidote also to certain mineral poisons. Gout and certain forms of gravel are often greatly relieved by the pills made from this soap mixed with carbonate of soda.

White Tea of Persia.—This is very similar, if not identical, with *Puêrh Tea*. It is composed of undeveloped Chinese tea buds so thickly coated with fine hairs as to give them a silvery appearance.

The liquor is of a pale straw colour, with the delicate flavour of good China tea. The finest of this kind of tea is reserved for Court use at Pekin.

This class of tea in London is called Flowery Pekoe Congou, but very little is used in England, while it fetches 3s. to 5s. per pound in Persia.

White Wax (See also *Vegetable Tallow, Wax*, etc.)

There are several kinds. The ordinary article sold under this name in England is usually Paraffin or Earth wax, but the best is pure Beeswax highly refined or bleached beeswax.

One quality, much used for laundry purposes, is a compound of white paraffin-wax and bleached beeswax.

White Wines.—A commercial term for wines light in colour and transparent (not absolutely white). Chablis, Sauterne, and the lighter coloured wines of Germany are familiar examples. White or yellow wines are often coloured with picric acid, saffron, bole, and other deceptive and injurious substances; but they may be had pure and exceedingly cheap in the south of France. Until about fifty years ago Madeira and sherry were classed as white wines.

White Wine Vinegar.—See *Wine Vinegars*.

Whitebait.—See *Sprats*.

Whitening.—F. *Lait de Chaux;* W. *Gwyniad.*—(See also *Paris White, Spanish White*, etc.).

Whiting or whitening is simply ground chalk more or less purified and separated from all sand and other impurities by grinding and washing it in alum water. It is then made up into small loaves, lumps, or moulds, and dried.

Whitenings are ordinarily classified as *Shop, Gilders'*, and *Common;* but are all produced from the carbonate of calcium, or chalk, which occurs naturally, both as a mineral and as the basis of extensive rock deposits.

There are large masses at the north and south of London, and very valuable white beds are quarried on the South coast of England. There the chalk rock is pulverised and finely ground with water in mills, from which it runs through long tanks, the heavier sand settling to the bottom, while the lighter *chalk* flows on to a large pit, when it also finally settles and dries. It is afterwards dug out to be carefully and slowly dried in ovens at a low temperature. When again powdered, whitening forms a dull white substance, insoluble in water.

It is often used, mixed with water and a little glue or size, as a paint for distemper work, and is also largely employed for colouring walls and ceilings. Mixed with about 18 per cent. of linseed oil, large quantities of whitening are used for making into *putty*.

Special Merchants and Exporters.—John Nisbet & Co., 18 Mains Street, Glasgow.

Whole Meal and Brown Bread.—Whole meal is produced by grinding wheat which has been deprived of a portion only of its husk, between steel rollers, but Sir H. Thompson, in his book on "Food and Feeding," strongly protests that this is an error, and says that no portion of the husk should be removed.

It is recommended as containing greater nutritive properties than ordinary flour. For, notwithstanding the persistency of foolish people choosing the whitest flour and bread, the human system rejects it, and calls for brown bread, or *whole meal* bread. A great number of fancy names are constantly cropping up, and the fact is proved that nature demands the coarser food.

It is, however, very important that this whole meal be finely ground. Much of the whole-meal bread contains comparatively large indigestible and irritating particles of husk, and although such bread may contain more nourishment, it does not follow that what is swallowed is therefore assimilated. Eating is not necessarily feeding, and the chief reason why whole-meal breads are not more favoured in some quarters, is that the branny particles are not sufficiently comminuted. The meal should be finer, and the bread well baked, otherwise white bread may, though chemically poorer, be more nutritious after all. The addition of one part of rice-meal to four parts of wheaten meal is also a great improvement.

Whole-meal Bread is often aerated by hydrochloric acid (3 parts), and bicarbonate of soda (2 parts), but there is the ordinary fermented method when properly carried out. Good quick yeast, with a little treacle or sugar, should be used freely so as to get a short, but vigorous fermentation, and in a temperature slightly lower than for *white* bread. The dough should also be rather wet, but not excessively so, or it will not bake—just slack enough to require a tin to hold it together.

The yeast for this should be mixed with cold water, say, 65° F., and it should be baked in a cooler oven than white bread. Wheat meal ferments very rapidly and a high temperature develops acidity, which causes the bread to turn sour. An oven too hot causes a disagreeable hard crust.

Six quarts of water, 7 oz. compressed yeast, 1½ oz. sugar, and 4 oz. of salt afford about the proper quantity of moisture for 34lb. good whole-meal bread.

Long sponges and much proving are a mistake, and the whole operation, inclusive of baking, should be done within three hours.

William Gardner and Sons, Engineers, Gloucester, make machines specially suitable for treating above. Catalogues free.

Whortleberries or **Whorts.**— F. *Baies d'airelles*; G. *Heidebeeren*; It. *Grandi di mirtilli*; Sp. *Bayas de mirtilo*; W. *Llusiduon bach.*

This is a collective name for several species of berries, or fruit, of heath shrubs of the *Vacciniaceæ* or Erica order. In the United States they are generally known as *Huckleberries*, in Scotland as Blaeberries, or Bleaberries, in various parts of England the respective types are called bilberries, blueberries, cowberries, hurtleberries or hurts. Those which grow in swamps and wet heath lands are often called dwarf dewberries, and the others are only to be found on the richer portions of moorlands where sun and water are abundant, not upon the high and dry arid soils which cover many of the moors. This latter gorse lacks the narrow, but well-defined leaf of the berry-yielding heath.

The *Whortleberry* proper is the blue, black, or red fruit of the *Vaccinium myrtillus*, a tall ling which grows from 2ft. to 6ft. high. The *Cowberry* shrub, *V. vitisidæa*, is an evergreen growing about 9in. high, with pink flowers.

Although many of these species shed their leaves yearly, they may almost be classed as evergreens because the shoots, stems, and branches generally remain green and active all winter. The berries at first green, gradually swell, changing to a dull red, then livid purple, and finally becoming a deep blue when fully ripe, and the surface being covered with a glaucous bloom like the black grape or the damson. Nature probably intended the fruit for wild birds, which are very fond of it. Each fruit contains a few nut-like seeds, with a very hard shell, inside the blue pulp. Small birds swallow the berry, but do not digest the seeds, which they therefore help to distribute under circumstances ad-

mirably adapted to their safe germination. Our children eat "hurts," or "whorts," in immense quantities also, and in every large town there is regular demand for these piquant fresh and wild fruit of the marsh and moor. At Exmoor large quantities are gathered in baskets for the Manchester markets. In Canada enormous lots are gathered and sent from St. John, N.B., to Chicago and other parts.

Wild Boar's Head Galantine.—There is seldom much boar's head in these. They are more often made of calf's head, and the heads of young, lean, domestic pigs. (But the name!) Salted pig's tongue, gravy beef, and lean smoked ham are all stewed, cut into dice, mixed well together, and filled into a boar's head mould. A few pistachio-nuts and sweet almonds, blanched and split in two, may next be arranged down the back of the head, and a truffle in each eye. (See p. 121.)

The "tusks" are afterwards made of egg-skins, rice-glue, and moulded into shape, and when hard and set are used to decorate the head. A few drops of glycerine with the mixture prevents the glue cracking and giving way.

In Germany, however, boars are very popular about Christmas time, and are imported largely from Russia, value £3 or £4 each.

Wild Tea.—The name given to a beverage produced from *Amorpha canescens.*

Willow Tea.—The prepared leaves of a species of willow grown in the neighborhood of Shanghai, and used by the poorer Chinese as a substitute for tea.

Wiltshire Bacon—(See also p. 68.)—Wiltshire bacon is now made all the year round by means of ice cellars and refrigerating machinery. To suit the public taste, it is made very mild, and the pig is often killed, cured, and consumed within a month or five weeks. For this reason the salt has not time to penetrate through and under the broad blade bone in the shoulder.

The peculiarity of the "*Wiltshire cut*" is, the hog is simply cut right down the middle, and the whole side, ham and all together, is cured in that way. The excellence of the bacon depends to a great degree upon the care with which the meat is drained from blood and slime before it is salted. The amount of salt used is not so important if this be well attended to. The quantity of salt for a whole pig is one pound and a half of bay salt, and one pound of common salt to six ounces of saltpetre, and one pound and a half of the coarsest brown sugar or treacle. Strew common salt over the bacon, and let it drain a day and a night. Powder the bay salt and saltpetre, and mix them thoroughly with the other salt and sugar. When well blended, rub each piece of bacon and lay them together in a trough. Turn every alternate day for a month. Smoke nine days. Sufficient for the flitches of one pig of ten or twelve stones.

The shoulder blade bone is usually taken out of the shoulder. Some say this causes waste, as the "pocket holes" foster live stock, but those who bone, roll, and slice the Wilts shoulders will find little if any detriment from the pocket hole.

"*Finest Wiltshire Cut*" does not always mean Wiltshire bacon, and although the term may be right between wholesalers and retailers who understand each other, and know what is meant, it is very misleading to the public. After all, it has been pertinently asked what constitutes the title of "Genuine Wiltshire Bacon"? Is all bacon sold as Genuine Wiltshire bred and fed in that county? or, are pigs landed in Wiltshire from Ireland, Denmark, etc., killed cured, and sold as "Genuine Wiltshire"?

Wiltshire Cheese—This is much the same as Gloucester, but smaller in size, and perhaps a little poorer in quality.

It is not a whole milk cheese, the evening's milk being generally allowed to stand for the night, to be deprived of its cream in the morning, and then the skimmed milk is mixed with the morning supply. It is generally set at 80° Fah. and the curd and whey heated as in the Cheshire system to 90° and 95°Fah. The curd is pressed for about half an

hour, then taken out and ground. About 2 per cent. of salt is added to the curd when put in the vat; it is then pressed, and occasionally rubbed with dry salt.

The outside is generally painted with a mixture of raddle, or red ochre, and whey.

After being in the press a week it is left to ripen in the cheese room. But North Wilts cheese is nothing like so popular as it used to be.

A considerable amount has hitherto been exported to the East, but even that has fallen off seriously.

The change is attributed to the inferior quality of the modern product in comparison to the advances made elsewhere, and especially to Australian competition.

Windsor Soaps. — *French, Common, Yellow, and Brown.*

These fancy toilet soaps are generally made of soda, oil, and tallow, and perfumed with the oils of carraway, lavender, rosemary, cassia, thyme, etc. It has been said that horse-grease, the cheapest kind of animal fat in the market, often enters into the composition of the cheaper kinds.

Common or plain Windsor is largely made from curd soap, coloured and perfumed with bergamot, lavender, or origanum, mixed with carraway oil.

French Windsor is composed of lard mixed with palm oil.

Yellow Windsor.—One sort is made from 25 kilos. tallow, 25 kilos. cocoanut oil, 25 kilos. soda lye of 38° deg. B., 4 kilos. of water, and perfumed with 8 parts oil of carraway, 8 parts oil of spike, 4 parts oil of cassia, and 3 parts oil of thyme; and coloured with 15 grains of uranine yellow.

Another yellow Windsor is produced from 25 kilos. tallow, 25 kilos. cocoanut oil, 23 kilos. soda lye of 38° B., 2 kilos. potash lye of 38° B., and 4 kilos. water, and the scent is made of 8 parts of oil of cassia, 9 thyme, 5 carraway, and 5 of oil of lavender; also coloured with 15 grains of uranine yellow.

Brown Windsor Soap is supposed to be, and was originally, white soap turned brown with age, but it is often merely common Windsor coloured with burnt umber, caramel, or brown ochre. The original maker of it is unknown. John Richardson and Son, soap makers, of London, made it in 1780. But it was probably made before that date; in fact, it is likely to be a survival of the time when each housewife made her own soap. Waste cedar-wood from pencil factories is also obtained and reduced to an impalpable powder for this purpose. A fair quality of Brown Windsor is made from 20 kilos. tallow, 30 kilos. cocoanut oil, 25 kilos. soda lye of 38° B.; coloured with 3½ kilos. of powdered cacao, ground in warm fat; and perfumed with 6 parts oil of lavender, 3 sassafras, 1½ cassia, 3 caraway, and 1 part of oil of fennel.

Window Polishing Pastes.—Finely powdered carbonate of magnesium is made into a suitable paste with soap spirit (soap dissolved in alcohol) and soda solution. Rub a little of above paste on a sponge over the glass, and polish with alcohol just before the paste dries.

Another good window polishing paste is made of 99 parts prepared chalk, and 5 parts each of white bole and Armenian bole, rubbed together with a smooth paste with 50 parts of water and 25 parts of alcohol. This paste is to be rubbed on the window, and when dry rubbed off with a dry cloth.

Wine.—Ar. *Khumr;* Da. *Viin;* Du. *Wijn;* F. and Sw. *Vin;* Ger. *Wein;* It., Rus. and Sp. *Vino;* Per. *Mei;* Port. *Vinho;* W. *Pwyn.*

Having given short descriptions of the several classes of wine under their own headings, it is not necessary to say much here. A few remarks concerning the methods adopted in the making of foreign wines may, however, not be out of place.

They are usually classed as *Dry* wines (*vin sec.*) or *Sweet* wines (*vin sucré.* It sounds rather paradoxical to call wine "dry"; but such is the fashion. "Sharp" or "tart" would convey a simpler idea of what is meant, so as to distinguish them from Sweet varieties.

In some places grape gathering always commences on a particular day of the year, whether the grapes are quite ripe

or not, or the municipal authorities fix the time according to fancy. The usual plan in gathering is to seize the branch with one hand and cut it off with a pair of scissors, but in some vineyards on the Rhine they will not suffer the hand to come in contact with the fruit, but take it off the vine with a wooden fork. The grapes are next usually placed in baskets, and carried away to the press or the treading-trough, as the case may be.

The wine-press is similar in construction to our cider-press, but a horse-hair cloth is not requisite as with us. The grapes will give by their own weight a certain quantity of wine, which is sometimes put aside. The screw is now applied very gradually, and the heap-up fruit gives forth its juice. After a time the edges of the mass are cut level with a knife, and the grapes thus obtained thrown on the top, and the pressure renewed. When the juice is all pressed out, water is thrown over the residue, termed the "mark," and a light, thin wine made out of it for the use of the peasantry themselves. This is the final process, and the mark is then only fit for manure.

The fermentation takes place in vats, and the larger these are the better. The "must" or juice of the grape, as fast as it accumulates, is thrown into these, and carbonic-acid gas is soon formed spontaneously, and rises to the surface with a scum. Great art is requisite to prevent the fermentation going on too fast if the weather be warm, or to hasten it if it be cold. The time varies almost everywhere, according to the wine under treatment, from forty to sixty hours to three months. When the process is complete, the wine is made and racked off into casks. Here, however, it is obliged to be watched carefully for months, and if it shows symptoms of fermenting strongly this is checked by the application of ice to the casks, and other means. Should fermentation, especially in the sweet class of wines, be allowed to proceed at this stage of their existence, they would in a short time turn to vinegar.

It is worthy of remark that a natural wine left to ferment at its own free will is rather a strong drink, equal to ordinary Malaga, but when the accumulated alcohol reaches the figure of 16 per cent. fermentation stops, because that minute plant, the yeast, which gives rise to this process, is killed. Stronger wines, therefore, such as port, contain added alcohol.

In some places they tread the grapes in troughs, with wooden shoes on their feet, and this method with red wine disengages the colour from the skins. The farmer who makes and manages the wine generally sells it to the agents of the wholesale shipping houses in the spring after it is made, or whenever it is fit to leave his hands. These parties then re-vat the wines, mingling different lots together, to suit the character of their brands. The wines are then drawn again into the original casks, are marked with the shipper's name, branded with a hot iron, and are ready for shipment abroad.

Generally speaking, the grapes are gathered as dry as possible, on a hot sunshiny day, but for some wines they are plucked with the dew still upon them. The peculiar flavour in good wine, and the bouquet which we discern upon it, are owing to what is called the essential oil of wine, which resides in the pips of the grapes and in the grapes themselves. In brandy this is more plainly perceptible, since this spirit is the essence of the wine itself. Champagne, according to Lord Byron, may be frozen when the latitude is cold enough. A mass of ice, consisting of the aqueous portion of the wine, is formed all inside the bottle, and in the centre remains a small portion the superb quality. Wine may also be cooled in summer weather by suspending a bottle to a tree, and constantly keeping it moist with wet cloths.

There are certain prevailing characteristics in all good wine, which, if studied, will invariably give the purchaser a correct judgment, even upon wines that he may never have seen before, say wine brought for the first time from Australia or Peru, and set before him. The first point to which we turn our attention is the bouquet, and this we take care to eliminate as much as possible by agitating the wine in a large

glass about one-third full. If this is favourable, and betrays a good odour of grape, we turn to the taste. If we find that the wine is sound, clean, and soft as silk to the tongue, and has a nice oily appearance as it trickles down the side of the glass, we pronounce it good. It is advisable to pass a sip of the wine well on the tongue and void it again, renewing this process until the organ of taste is well charged with it, as by this means any latent taste at the bottom of the wine will betray itself. (Spirits never need be tasted, but merely smelled).

Tastes differ so much that the home merchant keeps a good variety of wines to please the palates of his different customers. Some persons cannot drink Madeira, Marsala, or any other wines where there is the slightest tendency to acidity; others for this quality prefer them.

Foreign wines will probably never come into universal consumption in England, as, for one reason, we must not expect to deprive their producers of their natural beverage, and if these wines can be imported and sold here at a shilling a bottle after passing through three or four dealers' hands, our labouring men would rather prefer a shilling's worth of beer, since it suits their habits of life best. There is, however, a large class of consumers of the middle class to whom a glass of good sherry in the forenoon would be much more suitable than heavy malt liquors. We allude to the business men of our cities, as well as to those of limited incomes to whom a little good wine at a moderate price is scarcely accessible but might easily be imported and retailed at half the present prices. Many French and German wines are only suitable for consumption in their own country, as they are not good enough to bear transport. Nobody, therefore, need be under apprehensions that we shall be gorged with foreign wines, to the detriment of the trade in our own malt liquor. A great deal more good wine will doubtless come over here, but we must recollect that our neighbours will want the greater portion of what they make for their own consumption.

Red wines are sometimes artificially decolourised to represent white wines of higher value, by means of animal charcoal and potassium permanganate, but the sophistication may be readily detected on incineration, or by adding to 10 c.c. of the suspected sample 1 or 2 c.c. of caustic soda solution and 1 c.c. of hydrogen peroxide. A deep red-brown colour will be given by the falsified wine, but a natural white wine merely turns slightly darker.

The use of saccharin in wines or *must* is to be denounced, and should undoubtedly be considered an adulteration. It is certain that wines so mixed are spurious, and contravene the spirit of the laws dealing with food products.

As to the argument of its being a preservative, it is the general opinion of experts that to attain this purpose it would have to be used in such quantities as would render the beverage undrinkable, and consequently no such explanation can be accepted. Wine cannot, however, be said to be adulterated as long as wine only is used for mixing. The quality may be inferior, but still it is wine.

Many of the stories concerning adulteration refute themselves, and show the ignorance of their authors. To begin with logwood. If we make an infusion of this in water we shall find, at first, a brilliance in it similar to that of port wine, but after standing a few days this colour will entirely change to a dirty red, so that it is obviously not suited for the purpose of adulteration. Gin is watered, of course, to a moderate extent, but people will not buy it when too weak, as their own taste will discover the deception.

Sherry is the wine that is as little liable to adulteration as any. Factitious sherry may be, and is, largely produced (see "Sherry," p. 847.) Ports are more easily disguised, as they have much colour and fulness. Still, no adulteration of any kind should deceive a practical wine merchant. He has learnt his trade just as a surgeon learns anatomy, and should be able to discover by taste and smell when a wine is genuine or not.

The "*Monteur Vinicole*" gave the fol-

lowing as the amount of wine produced in various countries during 1895 :—

	Hectolitres.
France	26,687,600
Algeria	3,797,700
Tunis	179,800
Italy	21,343,400
Spain	17,250,000
Portugal	1,995,000
Azores, Canaries, Madeira	210,000
Austria	3,000,000
Hungary	2,865,000
Germany	3,645,000
Russia	720,000
Turkey and Cyprus	2,400,000
Bulgaria	1,200,000
Greece	1,600,000
Roumania	3,120,000
Switzerland	1,250,000
U.S.A.	850,000
Argentina	1,350,000
Chili	1,500,000
Australia	150,000

The United Kingdom imports annually about 14 million gallons. France sends about one-third, Spain one-fifth, Portugal one-fifth, the rest coming from Italy, Germany, Australia, California, and a few other countries.

There are no vineyards in Sweden, Norway, Denmark, Holland, Belgium, and England.

Wines in casks can usually be bottled after a fortnight's rest, but must not be drunk immediately.

The hogsheads must be placed in a cellar, bunghole sideways, and the air must not be allowed to penetrate.

The proper temperature for white wines is about 60° F., and for reds 62° to 66°. Champagne 46° to 50°.

The wine must be bottled when perfectly bright and in fine weather. To see if the wine is bright, pierce the lower part of the cask, and then examine the wine in a dark place in a glass, holding it before a lighted candle; when not absolutely bright wait a few days.

Be sure that the corks are new and the bottles perfectly clean and dry.

Fine wines improve by keeping in bottles, and it is recommended, as a rule, not to drink them before six months after bottling; it does not matter so much for ordinary wines, but even these are all the better for at least three months' rest.

Medicated Wines may be sold without a wine licence, provided they be rendered so strongly medicinal as to be incapable of being used as beverages.

As to the age and respectability of wines, the presence of cobwebs and dust on the bottles is not to be implicitly relied upon, because an industry has recently sprung up in France and Pennsylvania, if not elsewhere also, which consists of the farming of spiders for the purpose of stocking wine cellars and thus securing an almost immediate coating of cobwebs to new wine bottles, giving them the appearance of great age.

This industry is carried on in a little French village in the Department of Loire, and near Philadelphia, where *Epeira vulgaris* and *Nephila plumipes* are raised in large quantities and sold to wine merchants at the rate of about 40s. per hundred.

Finings for Wine.—Blood albumen affords a cheap and efficient "fining" material for wine. A gallon of *fresh* blood beaten up with a gallon of wine will clarify 200 gallons. *Milk* is sometimes used in place of blood, but it is not so reliable. If the wine is very valuable and the expense no great object, *white of fresh eggs* should be used, say, one egg to each 10 gallons. These whites should be beaten up with a little of the wine and then added to the bulk.

Gum arabic is sometimes used, but it is not so good as white of egg or blood. *Gelatine* and *fish glue* are often used when the weather is not too hot.

The yellow tinge which spoils the colour of some white wines may be removed by the above blood albumen recipe.

To detect alum in red wines, boil a sample of the wine for a few minutes. Pure wine remains unchanged, while the adulterated article becomes turbid.

Greenness.—This defect gives a very sour unpleasant taste to the wine owing to the malic and tartaric acids which are in excess. There is no ordinary de-

fect of wine which is more noticeable and more disagreeable than "greenness." As its name implies it is frequently caused by the use of unripe grapes. The treatment of such wine must be varied according to the taste. One of the various methods is to add from one to three quarts of old brandy to every 100 gallons of the wine. Potassium tartrate affords a cheap and easy method of neutralizing the tartaric acid, forming potassium bitartrate, which may be afterwards removed, when the wine is right. Say, 12 oz. to 20 oz. per 100 gallons according to degree of sourness.

Sourness is distinct from greenness, being due to minute quantities of acetic acid, instead of tartaric acid, and although all wines contain more or less of acetic acid, the instant it becomes in excess the wine becomes sour and unsalable. It should be clarified by either the blood albumen, or by the gelatine method, and then racked.

For pure wines write to M. & W. Jones (exporters), Villa Nova de Gaya, Portugal.

Wine Bitters.—See *Brandy bitters.*

Wine Essences.—These are syrupy compounds from which various kinds of temperance beverages, such as ginger wine, raspberry wine, etc., may be readily prepared by simply adding sugar and water.

For *Ginger Wine Essence.*—Mix and stir 5 drachms strong tincture of ginger, 5 drachms tincture of capsicums, 2 oz. tartaric acid, 12 oz. water. Add the above to 11 gallons of water in which 12lb. of loaf sugar has been dissolved, and flavour with a few drops of lemon. Colour with burnt sugar to shade desired. Although this wine so prepared really contains about 10 per cent. of proof spirit it is permitted by the Board of Inland Revenue to be made and sold by anyone having a compounder's licence. No spirit licence is required so long as the percentage of vegetable acid, tartaric or citric, is not less than the percentage of proof spirit contained in the mixture.

Wine Lees (dried).—F. *Lie de vin séché*; G. *Weinhefe getrocknete.*

Wine-racking, or changing them from one cask to another, is often necessary to clarify the wine and to check its tendency to fermentation, or to divide it into smaller casks.

The object is to draw off all the clear wine, so as to leave the scum, yeast, and sediment behind in the original cask. Cold clear weather is the best time to rack wine, as the wine is generally clearer then than in warm, close, wet weather.

The best thing to use is a clean syphon. New casks should not be used until they have been carefully prepared, tested, and examined. The casks should be well washed, half-filled with hot brine, bunged up, and shaken. When the brine becomes cold, the cask may be emptied, and if free from smell, it is ready for use. (See *Casks*, in Index.)

Wines (Pricked)—Pricked wine is a term applied to wine gone sour or tart. This generally arises from weakness or want of alcohol, bad corks, bottling in damp bottles, etc., and the simplest way to check the tendency is to add a little brandy. If in cask, it may also be prevented or retarded by steeping in it a linen bag containing powdered cockle or mussel shells. If the bottled wine have already acquired a sourness, it may be restored by the use of tartarised spirits of wine—one ounce to each bottle—well mixed, and then allowed to rest a few days.

Acidity in wine may be neutralized by magnesium carbonate, potassium, tartrate, etc., and these are better than the cheaper remedies of powdered chalk, marble, plaster, etc. To every 10 gallons of the wine add 10ozs., mixing it thoroughly a little at a time.

Wines (Ropy).—Ropiness or greasiness is a kind of ferment or disease to which wines which have not completed fermentation are liable, either in cask or bottle. The ropy ferment rises from a variety of causes, usually when normal fermentation is in some way stopped, and frequently through being bottled too early. It is evidenced by the formation of a stringy, glutinous, or tenacious

substance, which deprives the wine of its ordinary fluidity, and by a milky or flaky sediment at the bottom. If in bottle, the wine should be exposed to sun and air, well shaken, and uncorked, or it may be carefully decanted, allowed to rest a month, and then decanted again. If in cask, it should be cleared and well stirred. Then after a few days' rest racked off, or a little brandy may be added to the finings, and two ounces of ground alum put into a cask of 12 dozen bottles, after which it should rest three or four days.

Wine Spice.—The following ingredients should all be fresh, finely ground, and thoroughly well mixed together:—2lbs. cloves, ¾lb. mace, 2lbs. green root ginger, ½lb. cassia bark, and 4lbs. of Jamaica ginger.

Wine Vinegars. — G. *Weinessig.* (See also *Orleans Vinegar*).

These are the chief variety used on the Continent, and they always have an alcoholic flavour. The vinegars used in England are mostly made from grain, but they are best when from the grape.

Wine vinegar is produced in France from grape juice, cider, or light wines which have turned sour from weakness, age, exposure, weakness of alcohol, or other cause. It is really the result of a special fermentation of the wine due to the action of a bacteria known as the *mycoderma aceti.*

A little of the faulty wine is poured into a cask, partially open at the top, together with five or six gallons of white wine, which has been allowed to trickle through wood-shavings. In a few days, during which the temperature is maintained at about 80° F., a fresh quantity of wine is poured in, and in course of 12 or 14 days half the vinegar contained in the cask is drawn off and replaced by a fresh portion of wine. In this way an occasional renewal of the air in the upper part of the cask is provided for. The product is yellowish white (water colour) or red according to colour of grapes or wines used, but the lightest coloured is most esteemed. The acetification is found to proceed more rapidly in old casks than in new, which is attributed to the presence of the bacteria, or "Mother of Vinegar." The specific gravity of white wine vinegar should be 1.014 to 1.022.

The best is produced from white grapes, and that obtained from the red is almost equal, but that made from dried raisins is decidedly inferior. A blend of different wines is said to yield a good quality. White wine vinegar should be clear and limpid, have a light wine colour and an agreeable odour and taste. When heated it should give off vinous fumes, and on evaporation to dryness should yield a residue of cream of tartar.

Much of the so-called "*white wine vinegar*" sold in the United Kingdom is simply acetic acid diluted with water, and contains little or no sour wine.

Another article, and a very good one, sold under this name, is distilled from malt vinegar and distinguished by chemists as *acetum dest;* but *wine vinegar* is without doubt the original and etymologically the only correct substance entitled to be called *vinegar* (sour wine).

The term "white wine" vinegar appears to be merely a more precise description of the nature and origin of the vinegar, as it clearly points to its origin in wine, such as hock and sherry, from the white grape, although actually of a clear olive tint.

No wine is really *white*, and wine vinegars never are, so that white vinegars are not the products of wine.

In France wine vinegar is often adulterated with *Glucose* or *Sugar Vinegar*, which is largely made from starchy materials by conversion with weak acid and followed by fermentation and acetification.

Anyhow, to call dilute acetic acid or even distilled malt vinegar "white wine vinegar" is quite misleading and the practice should be deprecated. The genuine article, as made from wine, is so scarce that it has almost gone out of use in this country, but those who have tasted a salad made with real wine vinegar will rarely touch even malt vinegar afterwards unless compelled.

Special Manufacturers: — Dessaux fils, Orleans France; sole agents for the United Kingdom:—W. B. Fordham &

Sons, Ltd., 36 to 40, York Road King's Cross, London, N.

Winslow's (Mrs.) Soothing Syrup.—See *Soothing Syrups*.

Winter Cherries.—See *Cherries*.

Wintergreen. — F. *Gaultherie*; G. *Wintergrünblatter*; W. *Planhigyn*. (See also *Teaberry Tea*.)

This herbaceous heath plant, *Gaultheria procumbens* (bent down), is a species of *Erica*, also known as *Partridge berry*, and *Tea berry*, and grows wild in different parts of North-West America, and particularly in the State of New Jersey, where it abounds in the woods and drier swamps. As indicated by its name it is a dwarf evergreen and possesses a peculiarly pleasant odour resembling that of the sweet birch and is often used in flavouring tea, confectionery, and perfuming soaps, etc.

The *Oil of Wintergreen*, distilled from its leaves, contains about 10 per cent. of a volatile hydrocarbon called *gualtheriden*, and 90 per cent. of salicylate of menthol. It is used as a tonic and astringent, and is good for chronic rheumatism, but has now almost entirely disappeared from ordinary commerce.

Wodka or **Vodka.**—A kind of white brandy very popular in Russia, and almost the only spirit in general consumption there.

Wood Flour or **Wood Meal.**—Although not connected with grocery, the question may have arisen in many minds as to what wood flour is.

Wood flour, or, as it is sometimes called, "wood meal," is made of white wood, free from resin, chemicals or impurities of any kind, ground to a degree so that it will pass through a sieve of 50 meshes to the lineal inch, but not more than one-third through one of 100 meshes. It must not be exposed to acid fumes, or over-heated in drying, so as to enable it to pass the Government heat test for the detection of slight traces of vinegar, or other acid or objectionable volatile matter.

The reason for this care to keep the "flour" free from volatile matter, is that it is used to some extent as an absorbent for nitro-glycerine in the manufacture of explosives. The finest grades are also used in the manufacture of linoleums.

Nearly 2,000 tons are consumed annually in Great Britain. It is shipped from Canada in stout canvas bags, containing about 200 lb. The price paid ranges from £4 3s. od. to £4 10s. 6d. per ton of 2,240 lb. in London and Liverpool.

Wood Tea.—A decoction made from guaiacum-wood, sassafras, ononis-root, and liquorice-root.

Wood Vinegar.—This is the sort used by most of the large pickle manufacturers. It is considered quite as wholesome, much cheaper, and a better preservative than malt vinegar, although the latter has more flavour. See *Pyroligneous Acid* and *Acetic* Acid

Wood Wool or **Wood-Fibre Packing**—This white fibry material, mostly of Swedish or Norwegian manufacture, is now largely employed in place of straw, dirty paper, etc., for packing purposes, being much cleaner and far more springy, elastic, and soft. It is also claimed to be more economical than hay or straw, owing to its lightness; and, having a nicer appearance, sets off the eggs and goods to better advantage.

The labour of packing is moreover lessened, and the fibre is usually free from smell or damp. It is made of different grades of strand, and sold in hydraulic pressed square bales which are almost waterproof, and take up less storage room than hay or straw. The whole business in Sweden is controlled by the Scandinavian Wood Pulp Association, who fix the prices at about 50s. per ton for moist, and 100s. for the dried product.

A quantity is also made in the Adirondack Mountains, New York State, but that is mostly used in America.

Apply to A. Norsworthy & Co., Nottingham (see advt.); or M. E. Holdsworth, 3, Norfolk Street, Bradford.

Wooden Ware.—The chief lines are clothes-horses, clothes-pins, tubs, pails, wash-boards, towel-rollers, stails, or

broom and mop handles, fibre-brushes and brooms, and they mostly come from North America. Prices largely depend upon the cost of lumber in the Georgian Bay.

The old zinc washboard, like Time itself, endures. It is not rubbed out of existence. It is still ready to take its soapsuds dousing and its feminine rub-a-dub. Brass washboards entered the list, tried a few innings, and were struck out. Aluminum put a bright face in evidence, thought it was "some," but, like the vocative case, was found wanting, and dropped out. The zinc washboard has, however, met its match, and, if reports are true, more than its match. A great many good people now swear by the glass washboard. It is handsome, non-corrosive, easy on the clothes, and the gentle-sex hands About its only fault, so it is said, is its breakability. Careful handling, though avoids the crash and saves the pennies.

Wool Fat or **Suint.**—See *Lanolin.*

Worcestershire Sauces.—Lea and Perrins, originally chemists in a small way at Worcester, were the first to push the sale of this type of sauce, and for many years they were the only makers in this country. It appears the late Lord Sandys had picked up the recipe during his Indian travels and presented it to the firm as "an unconsidered trifle." For years they seem to have looked at it in the same light without making any particular use of it, but in 1838, when they began to manufacture and advertise it as "made from the recipe of a nobleman of the county," etc., etc., it gradually became popular. A short time ago one of the firm (Mr. Lea) died a millionaire, but many persons now alive can remember the little chemist's shop in the High Street, which was all they owned before they began the sauce business.

During the last 30 years the prices of sauces have been revolutionized, several improved Worcesters have been introduced, and it might be dangerous to say which is best. Under "Sauces" will be found an excellent recipe.

For Worcester Sauces apply to: Allen Jeeves and Sons, Seddington, Sandy, Beds; C. Windschuegl & Co., (Ingredients for), 1 Leadenhall Street, London, E.C.

Special Brand:—The "White Label" Worcestershire Sauce, J. A. Sharwood & Co., Ltd., St. George's House, London, E.C., sole proprietors.

Worm Powders—These usually consist of a purgative with *santonin* as a base, or *santonin* alone. For children 3 to 15 years of age one to three grains of santonin, according to age, given in a little milk each morning on an empty stomach, and a dose of castor oil three or four hours afterwards is an excellent remedy.

Wormwood.—See *Absinthe.*—

Writing Inks. — Da. *Black;* Du. *Inkt;* F. *Encre;* G. *Tinte;* It. *Inchiostro;* Port. and Sp. *Tinta.*

These are generally made by adding an infusion of the nut gall to sulphate of iron dissolved in water.

(1) An *Ordinary Black Ink* is made from 12 parts gall-nuts, 5 of sulphate of iron, 5 of gum Senegal, and 120 of water.

(2) A *Superior Black Ink:*—11 parts of gall nuts, 2 solution of iron, 1-7th of a part of solution of indigo, and 33 parts of water. The indigo imparts a very deep and brilliant blackness.

(3) *Blue-black Ink:*—A good and cheap one may be made by mixing aniline black "B" 2 ozs., gum arabic 2 ozs., acetic acid 2 ozs., and water 1 gallon. A violet tint may be imparted by the addition of a little carbonate of manganese. Or

(4) *Violet Ink* is easily produced from 1 part of aniline dye, 1 of methylated spirit, and 5 of water.

(5) Another blue-black ink is made as follows:—Boil 2lbs. pulverised gall-nuts in 3 gallons of water, strain through a clean linen cloth, and filter the decoction, then add 1½. each of sulphate of iron and gum arabic, dissolved in 3 to

6 quarts of water. This mixture must finally be stirred from time to time and exposed to the air till it assumes a bluish-black colour.

(6) *Red Ink:*—Carmine ink consists of 6 parts of carmine, 15 parts spirit of sal-ammoniac, and 2 parts of tartaric acid. Dissolve the carmine in the spirit (previously diluted with 15 parts of water), and then add the tartaric acid. Let the mixture stand two or three days, then pour off the supernatant red fluid, filter the sediment, and drain off the ink adhering to it.

(7) *Winckler's Red Ink:*—4 parts of red carmine rubbed very fine, with 50 parts of ordinary liquid water-glass. The resulting compound is then diluted with 450 parts of rain-water, and allowed to stand for a few days, when the fluid forming the red ink is poured off.

(8) Invisible writing inks have often been tried for secret correspondence, but they are of little use, because the chemical properties change by a few days' exposure on the paper, or betray a tinge when thoroughly dry, or when the paper is heated to a degree of scorching.

Wreaths.—See *Flowers*, etc.

X

Xeres or Jerez.—The Spanish name for sherry wine, which comes from the district of Jerez de la Frontera.

Y

Yams.—The large edible roots or tubers of several species of tropical plants. The roots are in some countries steamed, baked, or boiled, as potatoes, and in others—notably the West Indies—they are made into flour for bread, cakes, puddings, etc. In Jamaica yams are the chief food crop. The Malayan name for yams is *Ubi*, and for potatoes *Ubi bungala*.

The four species of yams most in use are: the common white (*Dioscorea sativa*), native of India; the mottled-white (known as the *Guinea*); the purple and the yellow prickly or hairy yam (*D. aculeata*), or Affoo Yam.

They sometimes grow to the length of 3ft., and weigh as much as 30lbs. each. These tuberous roots are also of various shapes; the white species are often as large as a man's head, while the hairy are of cucumber shape. The others are smaller, but all are very nutritious, wholesome and palatable, although not much relished by Europeans. The wing-stalked or red yam is *D. alata*, and the bulb-bearing or Grenada yam is *D. bulbifera*. There are also the Creole and Barbadoes varieties. Yams contain about 25 per cent. of starch, and if sun-dried and packed in ashes will keep good a month or six weeks. The Chinese yam (*D. batatas*) is fairly hardy and yields enormous crops in France and Algeria.

Wild Yams, known also in the United States as Colic-root, or rheumatism-root, are the rhizomes of *D. villosa*.

Yang-maes.—The fruit of *Myrica Naji*, a hardy plant, native of Chusan, and introduced by Robert Fortune in 1844.

Yangona.—See *Ava.*, p. 67.

Yaoust or Yaourt.—See *Koumiss*, p. 512.

Yapon, Yaupon, or Yupon Tea.—A famous black drink made by the Southern Indians in the United States, more particularly in Carolina, and used by them both ceremonially and medicinally.

It contains about 7.4 per cent. of tannin, .27 of an alkaloid like the theine of tea, and a trace of manganese, which is also a characteristic of tea.

It is made from the leaves of the *Ilex cassine*, an evergreen shrub or small tree of the holly family, found from Virginia, around the coast to Texas, and thence to Arkansas, often forming dense thickets, and in Texas assuming tree-like habits. It bears a quantity of scarlet berries of the size of peas, and branches of these are used for Christmas decorations. The leaves have an emetic and purgative property. (This tea is also known as *Cassena*, *Appalachian*, *Carolina*, and *South Sea Tea*.)

Yarmouth Bloaters—see pp. 120 and 461.

Yeast, Barm, &c.—Du. *Gist;* F. *Levure;* G. *Gascht;* Port. and Sp. *Fermento;* W. *Swyf Burym.*

Yeast is the frothy mass of fungi (*Saccharomyces cerevisiæ*) produced as a by-product during the alcoholic fermentation of beer, wine, spirits, potatoes, and other saccharin substances. It is also the prime product in many manufactories, where the highest skill is employed in its production. When mixed with moistened flour it converts the starch contained in the flour into sugar, and thus sets free carbonic acid gas, which, in its effort to escape, spreads through the whole mass of dough, making it light, porous, and spongy.

All kinds of leavening matter are used in different parts of the world. In the East Indies "*toddy*," which is a liquor obtained from the wounded cocoa-nut tree; and in the West Indies, "*dunder*," or the refuse from rum making.

Stale yeast produces, instead of a *vinous* fermentation, an *acetous* fermentation, which flavours the bread and makes it disagreeable. A poor, thin yeast produces an imperfect fermentation and a heavy unwholesome loaf.

German Barm is a cheesy compound made up of yeast, foam, or scum, dried and compressed into a form more portable and convenient for travelling. It is chiefly imported from Holland, where immense quantities of potato spirit are made.

Perhaps the largest factory is at Delft, Holland, which turns out about 100 tons a week. This ancient Dutch town is well situated for a good and cheap supply of fuel and grain, and has convenient railway and canal services. Yeast is the chief object of manufacture, but Gin and Glucose are also produced sometimes as by-products. The grain, comprising barley, rye, and Indian corn, is raised direct from barges by endless conveyors to the top of a large storage warehouse. From this height it is allowed to gravitate into tanks, through which powerful currents of air are blown. From these tanks the grain is conducted, as required, on endless bands into the mills for treatment; but before being ground the barley is malted, to develop in the grain, by means of germination, the saccharificating ferment, *diastase*, which will in turn transform later on, in the process of maceration, the farinaceous matter into *glucose*. After being allowed to soak from 24 to 48 hours in cold water, frequently renewed, the barley is spread out in thin layers on vast malting floors, the super-posed shelves of which are supported on iron columns. By this means the barley is converted into malt, and is then ready for drying. This process takes place in kilns, heated by means of a stove at the bottom, so that, the grain being admitted at the top, where the temperature is lowest, is allowed to gravitate to the bottom, where the greatest heat is encountered. From these kilns the grain is again taken by means of conveyors to a cleaning chamber. The process of maceration takes place in large wooden tubs, and in an adjoining chamber the fermentation tubs are placed. Into these tubs is introduced with the saccharified pastes a fermenting agent, previously prepared by the mixture of yeast and flour.

The fermentation process is not limited to the transformation of the sugar into alcohol, but also evolves the yeasts which are the chief product of this factory. (The alcohol after being drawn off and rectified is bottled and sold as Hollands gin.) These are collected in a frothy state on the top of the liquid and are conducted through channels into a common reservoir. By next passing them through sieves they are cleansed, then collected in a milky state, and after repeated washings in clean waters are transported to filter presses, by means of which the excessive moisture is expelled, leaving a solid cake—the yeast of commerce.

There are now also about a dozen large "patent still" distilleries in this country where similar yeast is really the main product. This compressed

barm is very extensively used in most of our large towns and other densely-populated districts. It is often heavily adulterated with starch and other impurities. When used it should be gradually reduced with lukewarm water or milk to the consistency of cream or ordinary fresh brewer's yeast.

Few people have a correct idea of the enormous extent of the yeast industry in the three kingdoms. The annual consumption amounts to about 96,000,000lbs. of which about 28,000,000lbs. of distilled yeast, valued at over £650,000, are imported from the Continent.

As already stated the manufacture of this yeast is also carried on in England, Scotland, and Ireland: but by far the greater portion used still comes from Holland, France, and Germany.

It is made by sowing or "pitching" a small quantity of it into saccharin liquor in which it is grown. It is then skimmed off, or in other ways separated, washed and pressed. The liquor in which the yeast thus grows generally contains a little starch in suspension, and some is therefore mechanically carried forward in the yeast. Flour is also often dusted over the outside of the cakes of yeast before packing them so as to absorb any superficial moisture. The quantity of starch thus occurring should, however, not exceed 2 to 5 per cent., but sometimes as much as 30 to 50 per cent. has been found—which quantity is, of course, a cheapening addition and a gross adulteration.

Scalded potatoes have also been used to invigorate the yeast, but this is not now general, although a small quantity of malt extract is often employed to improve the flavour of the bread.

It may also be employed in liquors to make them ferment or work.

"German barm" soon becomes putrid, especially in hot weather, and should be preserved in the solid blocky state—not broken up into crumbs—till wanted for use.

A *Patent Yeast* is made from a wort of malt and hops, and afterwards dried. For yeast, apply to Irish Distillery Co., Connswater, near Belfast, or E. H. Skilton, Merchant, 6, Wellington Street, Hull.

Yeast Powders.—(See also "*Easteleine*" and *Baking Powder*).—The formation of these generally comprises two parts of cream of tartar and one part of carbonate of soda.

Yellow or Persian Berries.—The unripe fruits of the South European *Rhamnus infectorius*, used in dyeing and tanning. Imports 500 tons yearly, mostly from Smyrna. The inferior French sort are known as *Avignon Berries*.

Yellow Crystals.— A name given to dyed sugar made by "respectable refiners" to imitate Demerara sugar. It is easily detected by moistening it with hydrochloric acid, a red colour at once betraying it.

Whether the fraudulent manufacturers have made money out of it or not, they have certainly spoiled the reputation and business of our colonial friends, and also caused hundreds of retail grocers to be fined and disgraced for selling the factitious article.

Yellow Leather Dressing.— See *Brown Boot Polish*, p. 147.

Yellow Ochre.—This consists of aluminium silicate, coloured with varying quantities of ferric oxide. When finely ground it is used as a pigment. It is made red or reddish brown by calcination in a reverberatory oven, which peroxidizes the iron (see *Ochres*).

Yellow Soap.—(See also *Soaps*.)—This is an excellent kind for the skin, and is usually made by boiling tallow, and various cheap oils in soda ley. A certain amount of resin is generally added after the boiling is done to make it lather, but if it contains too much resin, and too little tallow, it becomes irritating and injurious to the skin. Sometimes *yellow soaps* are made from cocoanut oil with about 20 per cent. of crude palm oil, and 10 per cent. of American resin.

A "bar" of soap used to be made to weigh over 3lbs. when new, but several manufacturers have lately been making lighter bars of 2lbs. to 2½lbs. to suit "cutting" retailers. There used to be only 30 bars to the cwt., but now there are often 40, and even 42.

Yellow Wax.—A synonym for *Beeswax*, according to the British Pharmacopœia.

Yerba (or **Yerva**) **de Mate.**—See *Paraguay Tea.*

Ylang Ylang.—A favorite perfume obtained from *Cananga odorata.* The finest Manila Ylang Ylang oil is very delicate and powerful in odour. It has specific gravity of from 0.940 to 0.955, and is soluble in alcohol. It first reached Europe in 1864.

Yolk or **Yelk, of Egg.**—See *Egg Yolk.*

Yolkine.—Usually a colouring substance, made up of aniline orange, to imitate the colour of eggs in pastry, etc.

Yopon.—See *Yapon.*

York Cheese.—A noted kind of soft cream cheese, but will not keep long.

Young Hyson.—See *Hyson Tea.*

Yucca, Manioc, or **Cassava.**—This well-known plant is very common in South America, and an exceedingly useful source of food (see *Cassava, Mandioca,* etc.). The sweet cassava, *Manihot aipi,* is the commonest; the poisonous or bitter sort, *M. utilissima,* being rarely met with. The first named will remain good in the ground for six months or so after being ripe. It is never made into tapioca in Columbia, but used as a vegetable, or made into bread. The yucca plant (*Yucco gloriosa*) in Venezuela has long been considered valuable for its roots, and in consequence of the low prices now obtained for coffee, farmers are developing the yucca industry.

One hectare (2.47 acres) of land will produce yucca yielding 15,000lbs. of starch, or 20,000lbs. of tapioca.

Z

Zampone. — A favourite Italian delicacy, consisting of a mixture of pork and suet tied up in the skin from the forelegs of the pig, salted and smoked. Mostly prepared in Naples.

Zante Currants.—(See also *Currants.*)—The dried fruit, sometimes called *Corinthian Raisins,* produced from small purple and seedless grapes, of the variety *Corinthiaca,* about the size of peas, and which grow in clusters about three inches long.

Large quantities of this description are cultivated in Morea, Corfu, and other Islands of Greece, as well as in Zante. In the latter the fruit is grown on vines kept about four feet high on an immense plain, under the shelter of the mountains on the shore side of the island, where the sun has great power, and quickly brings them to maturity.

The vine was originally imported into Zante by refugees from Corinth in 1530, and these currants now form the staple production of the island.

The fruit is ready about the end of July or early in August when the branches are gathered and laid out on carefully prepared drying grounds, which have been previously besmeared with a coating of cow-dung liquefied in water, or in wooden trays, and they remain exposed for eight or ten days according to the power of the sun's rays. They are then cleared with a light broom from the stalks, and are heaped together for about 24 hours, and finally passed through a winnowing machine for market.

When gathered and dried by the sun and air, on mats, the currants are conveyed to magazines, heaped together, and sometimes left to cake until ready for shipment. They are then dug out with iron crowbars, trodden into casks, and exported. The fertile vale of "Zante the Woody" produces about 9,000,000lbs. of currants yearly.

Zea Mays.— A native American name for Indian corn.

Ziegen-Kase. —Cheese made of goat's milk in Germany.

Zieger-Kase—Cheese made of sour milk.

Zermatt Cheese.—A Swiss manufacture produced in the hamlet of that name near the Matterhorn.

Zest. —A mixture of ground spices, say 10 parts of white pepper, 2 of mace, 2 of nutmeg, and 1 of cayenne.

Zinc Soap.—A metallic soap obtained by the double decomposition of zinc sulphate and ordinary soap, or by saponifying zinc white with olive oil or fat. It is used as an oil colour, as an ointment, and also as zinc plaster.

Zinc White.—F. *Blanc de Zinc*; G. *Zincweiss*; It. *Bianco di Zinco*; Sp. *Blanco de Zinc*.

The impure oxide of zinc, now largely employed for the same purposes as *white lead*. It is more permanent and less poisonous, but does not "cover" so well, and two coats are often necessary.

Zisnozakouski.—A Russian condiment commonly called *Zisno*.

Zita.—See *Italian Pastes*.

Zulu Hats.—These broad-brimmed hats, made from *Cyperus tegetiformis*, were first introduced into England in 1878, and are often largely sold in tea and chandlers' shops.

Zulu Imphec.—See *Imphec*.

GENERAL INFORMATION.

SIGNS, SYMBOLS, ABBREVIATIONS, AND BUSINESS TECHNICALITIES.

@ = To, at, or from.
A.B. = "Able-bodied" (seaman).
A/C = Account current.
A/c, or Acct. = Account.
A.D (Anno Domini) = In the year of our Lord.
A/d = After date.
Ad, or Adv. = Advertisement.
Æ = Second class (ships).
A.g.b. = A good brand, or any good brand.
A 1 = First class.
A la = In the style of.
Ala. = Alabama.
A/o = Account of.
Ar. = Arabian.
Ark. = Arkansas.
Arr. = Arrived.
A/S = Account sales.
A/T = American terms (grain trade).
Av. = Average.
A.V., or Ad val. = Ad valorem (according to value.

Bah. = Bahamas.
Bal. = Balance.
Bbl. or Bl. = Barrel.
B.C. = British Columbia.
Bdgs. = Buildings.
B/E = Bill of exchange.
B/H = Bordeaux or Hamburg (grain trade).
B/L = Bill of lading.
Bk. Dft. = Bank draft.
B.P = British Pharmacopœia.
B.P.B. = Bank post bill.
Bro. or Bros. = Brother or Brothers.
B/S = Bill of sale.

C., cent, or centime = One-tenth of a penny.
C., Celcus, or Centigrade (20 deg. C. = 20 degrees Centigrade).
C.A. = Chartered accountant.
Cal. = California.
C/ or C/s = Case or cases.
C. & F. = Cost and freight.
C.c. = Cash credit, or cubic centimetre.
Cent. = Centum (hundred).
C.f. & i. = Cost, freight, and insurance.
C.H. = Custom House.
C.i.f. = Charges, insurance, and freight.
C/O = Cash order.
c/o = Care of.
C.O.D. = Cash on delivery, or collect payment on delivery.
Com. = Commission.
Conn. or Ct. = Connecticut.
Const. = Consignment.
C.W. = Canada West.
Cwt. = C (100), wt (weight).

Dbk. = Drawback.
D.C. = District of Columbia.
D/d = Days after date.
Dd/s = Delivered sound.
Dft. = Draft.
Dis. or Disct. = Discount.
Div. or Divi. = Dividend.
D/O = Delivery order.
Dols. or $ = Dollars.
Dr. = Drachm or dram.
D/S = Days after sight.
D/W = Dock Warrant.
Dwt. = d (1d.), wt (weight).
Dy. = Penny (as 10 dy. nails).

Ea. = Each.
E.E. = Errors excepted.
E. & O.E. = Errors and omissions excepted.
e.g. = Exempli gratia, for example.
E.I. = East Indies.
E.O. = Excise officer.
Ex. or e. = Out of (as ex steamer "Cevic").
F. = Fahrenheit (68° = 68 degrees Fahrenheit).
F.a.s. = Free alongside ship.
F.a.q. = Fair average quality.
Fcp. = Foolscap.
F.f.a. = Free from alongside.
F.G.A. = Foreign general average.
F.i.t. = Free of income tax.
Fla. or Fa. = Florida.
Fo. or Fol. = Folio.
F.O. = Firm offer.

F.o.b. = Free on board.
F.o.r. = Free on rail.
F.O.W. = First open water.
F.P.A. = Free of particular average.
Frt. = Freight.

Gal. = Gallon.
gm. = Gramme.
G.m.b. = Good mercantile brand.
G.o.b. = Good ordinary brand.
G.P.O. = General Post Office.
gr. wt. = Gross weight.
grs. = Grains.

H.M.C. = His (or Her) Majesty's Customs.
H.M.S. = His (or Her) Majesty's Service.
H.P. = Horse power.

Ia. = Indiana.
ib. = Ibidem, in the same place.
id. = Idem, the same.
i.e. = Id est, that is.
Ill. = Illinois.
Imp. = Imperial.
Ind. Ter. = Indian Territory.
Ins. = Insurance.
Inst. = Instant, of the present month.
Int. = Interest.
Inv. = Invoice.
Io. = Iowa.
I.O.U. = I owe you.
I.W. = Isle of Wight.

J/A = Joint account.
Jam. = Jamaica.
Jun. or Jr. = Junior.

Kan. = Kansas.
K., Kg., or kilo. = Kilogramme.
Ken., or Kn. = Kentucky.

La. = Louisiana.
L.C. = Lower Canada.
L/C = Letter of credit.
L.S. = Locum sigilli, place of seal.
L.s.d. = Libræ (pounds), solidi (shillings), denarii (pence).
L.W. = Last week.

m = Minims or drops.
m. mille = Thousand (as 10/m).
M.b.l. = May be left (without cash).
M/d. = Months after date.
Mdlle. = Mademoiselle, Miss.
Mem., or Memo. (Memento) = Remember, memorandum.

m/m = Millimetres.
M/M = Messieurs or Messrs.
Mo., mos. = Month, months, or
Mo. = Missouri.
M/R = Mate's receipt.
MS. or MSS. = Manuscript, Manuscripts.
M/s = Months after date.

N/A = No advice (banking).
N.B. = North Britain, or New Brunswick.
N.B. = Nota bene (mark well).
N.C. = North Carolina.
Neb. = Nebraska.
N.F. = Newfoundland.
N.G. = New Granada.
N.H. = New Hampshire.
N.J. = New Jersey.
N.M. = New Mexico.
No. = Numero, or number.
N/O = No orders (banking).
N.S. = Nova Scotia.
N.Y. = New York.

O. = Ohio.
O.A. = Official assignee.
o/a = On account of.
o/c = Overcharge.
O.H.M.S. = On His (or Her) Majesty's Service.
O.K. = Orl korrect (all right).
Oxon. = Oxford or Oxfordshire.
oz. or ozs. = ounces.

Pa. or Penn. = Pennsylvania.
P.C. = Post card.
P/C = Price current.
p.c. or per cent. = Per centum.
Pc. or Pcs. = Piece or pieces.
P.C.B. = Petty cash book.
Per pro. or p.pro. = Per procurationem.
Phila. = Philadelphia.
Pkg. = Package.
P/N = Promissory note.
P.O. = Postal order, Post Office.
P.O.O. = Post Office order.
p. or pp. = Page or pages.
Pro. = For.
Pro tem. = For the present.
Prox. or Proximo = Of the next month.
P/S = Public sale.
P.S. = Post scriptum.
P.T.O. = Please turn over.

Q. or Qy. = Query, or Question.
q. (Lat. quadrans) = Farthing.
Q.S. or q.s. (Lat. quantum sufficit) = A sufficiency.
Qt. or qt. = Quart.

R/ = Recipe.
R. = Reaumur (16° R = 16 degrees Reaumur).
R/D = Refer to drawer (banking).
Re. = In regard to, relating to.
Rect. = Receipt.
Ref. = Reference.
R.I. = Rhode Island.
Rm. = Ream.
R.S.V.P. (Repondez s'il vous plait) = Reply if you please.
Rx. = Recipe. Take.

Salop. = Shropshire.
s.c. = Sharp (prompt) cash.
S.C. = South Carolina.
S/D = Sea damage for sellers' a/c.
Sec. = Section, or secretary.
Sen. = Senior.
Seqn. = Sequestration.
Sk. or Sks. = Sack or sacks.
S/N. = Shipping note.
Sov. or sovs. = Sovereign—s.
Sp. gr. = Specific gravity.
S.P.Q.R. = Small profits and quick returns.
S.S. or S/S = Steam ship.
Std. = Standard.
Stg. = Sterling.
Str. = Steamer.
Syn. = Synonym.

Tcs. = Tierces.
Tenn. = Tennessee.
Tex. = Texas.
T.O. = Turn over.

U.K. = United Kingdom.
Ult. or Ultimo. = Of the last month.
U.S.A. = United States of America.

V. = Versus, against (legal).
Via. = By way of.
Viz. = Videlicet, namely.
Vt. = Vermont.

W.A. = West Africa, West Australia.
Warts. = Warrants.
W.I. = West Indies.
Wk. or wks. = Week or weeks.
W/N = Weight note.
Xmas. = Christmas.
Yd. = Yard.

A 1 is a term applied to anything supposed to be of first-class quality. Its use has been derived from the fact that Lloyd's, in classifying vessels on their register, use this mark to denote ships of the highest class.

Above Par.— When the value of shares, etc., is above the price originally paid for them, they are said to be *above par*, or *at a premium*.

Below Par.—When the value has decreased, and is below the original rate, it is *below par*, or *at a discount*.

R.S.O.—A postal abbreviation for *Railway Sub-Office*, generally written after the names of those towns or villages which receive their correspondence direct from the travelling *post office attached to the mai train, and not through the office of another post town.*

S.O.—Sub-Office. An office which receives a portion of its letters from a head office, and part from the travelling post office.

Poste Restante. = To Remain till called for. A French phrase, also adopted in England, and put upon letters and parcels sent through the post when they are to remain at the post office till the addressee calls for them.

Parity = Equality in value. Thus "hempseed being very scarce in Russia at present, the price is 1s. above London parity"—i.e., that the same quality of seed is, when freight and other charges of transit are reckoned, 1s. dearer in Russia than in London.

Price Current.—A list of articles offered, sold, or selling, showing the market prices of the day.

Prime Cost.—The original value or price of anything.

Pro forma Invoices. — *Pro forma* means "for form's sake." A *pro*

forma invoice is therefore often sent to parties who forward orders for goods without the cash, and shows them the quantity, price, manner and cost of packing, discount, nett total, and terms of payment expected. It is not binding on either party to complete the transaction if the buyer does not approve of the terms or charges.

Pro and Per Pro Signatures.—*Pro* merely means "for," and this is the proper term for an ordinary clerk or assistant to use when signing for his principals, thus, "*Pro* John Brown and Co., J. Jones," (Some firms object to their employes' names appearing in full, and require the signature to appear "*Pro* John Brown and Co., J. J.") *Per pro* is a more important form, and means "*per procuration*," implying a greater representative power, granted either by special letter or power of attorney, to sign and act for another. A signature by procuration, however, is held at law to operate as notice that the agent has but a limited authority to sign; and the principal is only bound by such signature if the agent in so signing was acting within the actual limits of his authority.

Conditions of Sale.—"One and one" means 1 per cent. discount for payment within one month. "14 and 2½" means 2½ per cent. discount if paid within fourteen days. "Gross as nett" means that the gross weight is to be reckoned as the nett weight, and no allowance for tare.

Verbal Orders v. Written Orders.—No contract for the sale of any goods, wares, or merchandise for the price of £10 sterling or upwards shall be allowed to be good, except (1) the buyer shall accept part of the goods so sold, and actually receive the same; or (2) give something in earnest to bind the bargain; or (3) in part of payment; or (4) that some note or memorandum in writing of the said bargain be made and signed by the parties to be charged by such contracts, or by their agents thereunto lawfully authorised.

"*To Arrive*" means "subject to arrival," or "in the event of arrival." A man cannot legally sell goods "to arrive," if they have not been shipped, so that an offer to sell goods to arrive implies that a lot of such goods is actually on board ship, and shall be delivered to buyer on arrival. Should the goods or the ship be lost, the sale is off, and the seller is protected, and cannot be held responsible for non-delivery.

"*Tale Quale*," or "*Tel Quel.*"—A term often used in contracts for goods sold to arrive (particularly grain), or sold "off the coast" by a sample drawn at some port where the ship has touched. It means that the goods are sold in their present condition at moment of sale, as witnessed by the sample, but that the buyer takes from the seller all risk of any damage or change the goods may afterwards undergo during the voyage, etc., or between sale and arrival.

Allowances, Deductions, etc.—*Draft.*—A deduction made from the gross weight of the goods, and is subtracted before the tare is taken off.

Tare.—A reduction made for the weight of the bag, case, chest, box, cask, or other package in which the goods are packed, or for the paper, thread, bands, etc. *Actual, open*, or *real tare* is the exact weight of the package before it was filled. *Average tare* is used where the packages are numerous, and similar in size; an estimate is formed by weighing only a few of the packages; their mean average is then taken as the tares of the remainder. *Computed* or *Estimated tare* means that the package itself has not actually been weighed, but is similar to others that have been, or is an estimated allowance agreed upon. *Customary tare*, an established or uniform allowance accepted as the rule of the trade. *Super tare* is an additional tare when the package exceeds a certain weight.

Tret.—An allowance of 4lbs. from every 104lbs. of *suttle weight*, for evaporation, seepage of liquids, refuse matter, waste, dust, sand, etc. This allowance is now almost limited to drugs, essences, etc., but has lately been suggested for provisions. The term "tret" is said to have originally grown out of the Latin word *tritus* which means that which is robbed away.

Nett Weight.—When tare is subtracted the remainder is called the nett weight, but if tret be allowed it is called *suttle weight.*

Cloff or Clough.—A deduction of 2lbs. from every 3cwts. of the *second suttle* weight, that is, the remainder after draft, tare, and tret have been subtracted, but this allowance is very rarely recognised nowadays.

Discount.—The allowance made from a sum of money for paying it before it is due; or, a part deducted from the *count;* thus, among bankers, the deduction of the interest on a sum of money lent at the time of lending. Other allowances or charges embrace breakage, damages, leakage, shortage, freight, carriage, cartage, porterage, postage, discount, interest, insurance, commission, brokerage, etc.

Ullage.—A term denoting the quantity which a cask or other vessel wants of being full. Deficiency.

Abatement or *Rebate.*—A sum deducted, withdrawn, or allowed, from an account for some stated reason.

Pesage.—A sum paid for the weighing of merchandise.

"Carriage Paid," or **"C.pd.,"** means that the goods are to be delivered free to the address of the buyer, and includes not only railway charges, but also any cartage charges from station. It has also been held that sellers of goods "carriage paid" are bound also to pay for the return of the packages in which the goods are sent, unless there have been special arrangements or precedents to the contrary.

Lien.—A right to detain the property of another on account of labour expended on that property; but does not ordinarily give the right to sell the same.

Attachment of Debts.—When a plaintiff has obtained a judgment against a defendant, he may put in force a certain process, under which debts owing to the latter may be made answerable to the plaintiff's claim. The process is called "attaching." (See Statutes 17 and 18 Victoria, Chapter 125, Section 60.)

Bonus.—(1) An extra dividend sometimes given to shareholders in public companies when the profits made are far above the ordinary average. (2) A periodical addition made to Life Assurance Policies out of the general profits of the company. (3) A percentage now commonly allowed to dealers, wholesale and retail, by manufacturers of proprietary articles conditionally upon the goods not being resold below a certain price, nor resold at any price to those who, from unworthy motives, would undersell the same.

Coupons.—Tickets, or certificates of interest, sometimes bearing different dates, attached at the foot of debentures, bonds, etc., and intended to be presented for payment when due.

Contra Accounts, or **Mutual Debts**—Where there have been mutual debts, contra accounts, or other mutual dealings between a bankrupt and any of his creditors, the sum due from the one party is set off against the sum due from the other, and the balance only can be claimed on either side.

But a creditor has not this right of set off, if, when he gave credit to the debtor, he had notice of an act of bankruptcy committed by him, and available against him.

Bonds.—Bonds are little used now except as sureties for the good conduct of third persons. It will, therefore, suffice to point out that a bond, given for the honest discharge by a

person of the duties of a particular office, entitles the employer only to the amount of the loss actually sustained in the event of such person proving dishonest. If the bond be for a thousand pounds, and the loss sustained only five hundred, the employer can only recover the latter amount.

Cash on Delievry, or C.O.D.—These terms mean that goods are not sold "on credit" or "on time." A porter or carrier, on tendering such goods at the purchaser's door, should not leave them without getting the cash. A cheque may be of no value, and should be refused. If the goods be taken in for examination, counting, fitting on, or other reason, and the porter or carrier can neither get the money nor the goods back again, he should at once call a policeman and enter the house to follow his goods, and charge the party in possession of them with theft. If he accepts a signature for the goods, or goes away with a promise of payment, he has left the goods "on trust," and the matter becomes a mere debt which may only be recoverable through the County Court.

Cash Orders.—A "Cash Order," or C/O, is a sort of draft payable on demand. They are seldom used by English firms, but in Scotland and Ireland it is customary with some firms who send goods to England to forward the usual invoice to the purchaser, and at the same time, or whenever the nett amount is due, to write saying they are passing a cash order on him for the amount. The firm then draw out or fill up the cash order form, and pay it in to their bankers for collection, as they would a promissory note. In a day or two it is presented to the purchaser by some local banker for payment. It is considered rather sharp practice to pass a cash order on a man without his consent, and many respectable traders, objecting to the system, refuse to pay in that way. In this event the cash order is returned by the local bankers, and the drawer has to pay their charges.

Advance Notes.—Authorised drafts on the owner or agent of a vessel, executed by the master, generally for one month's wages, and given to the seaman on his signing the articles of agreement.

"Envoi contre Remboursement." A very useful Post Office parcel system in France, whereby goods may be sent through the post for delivery to strangers, and payment received by the postman. Such goods are commonly sent on approbation, and may be either examined and returned, or be kept and paid for. The parcel or the money, less a commission, is returned to the sender by the Post Office. In America, a like system prevails through a *Parcels Forwarding Company*, whereby the receiver of the parcel, on depositing its value with the company, may, or may not, return the goods after examination or trial, and receive back his money, less a small commission.

Accommodation Bill. A term to denote a bill not representing a *bona-fide* transaction, but drawn for the purpose of raising cash. Example—Two or more separate traders short of money, mutually agree to draw on each other bills for, say, £50. Each party then either gets his own banker to discount the bill he has obtained, or he tries to pay it away instead of cash to someone he owes money to. Few bankers will discount such bills if they know or suspect how they have been obtained, and the practice is denounced as mere "Kite-flying." The business altogether is very dangerous, for each party is usually sorely embarrassed, or he would not trust the other, and if one fail to meet his bill when due the other party will, of course, be called upon to pay both that and his own bill at once.

Days of Grace.—Bills of Exchange or Promissory Notes, payable at any time after date, have three days of grace allowed. Thus, a bill dated 1st January, at two months', is not due till 4th March; but, by a recent Act, no days

of grace are allowed on bills drawn at sight or on demand; such must, therefore, be paid on presentation. Bills falling due on "Bank Holidays" are payable the day after, but those falling due on Sundays, on Good Friday, and Christmas Day must be paid the day before.

Bale Goods, or **Merchandise**, are terms applied to those goods which are generally packed and imported or exported in bales or wrappers, or are simply bound up with iron strips or cordage, such as cottons, woollens, silks, bacon, cloves, red chillies, etc.

Manifest.—A statement or declaration made concerning the cargo of a vessel for the satisfaction of the Custom House officers.

Customs.—Duties charged by the Government upon commodities imported or exported.

Excise.—Duties levied by the Government on certain articles of home production.

Permit.—A document given by the Excise to permit the removal of exciseable goods from one place to another.

Del Credere (Lat.). — An engagement made by an agent that, in return for an extra percentage being allowed him, he will be responsible for the payment for all or part of the goods he sells, whether he himself receives payment or not.

Power of Attorney.— The name of a legally drawn-up document authorising one person to act for another person. It is often exercised by firms to give their managers power to sign cheques, bills, etc., also by persons absent in foreign countries, aged persons, and those of weak intellect.

Receiving Order or **R.O.** — An order made by the Bankruptcy Court, appointing an Official Receiver to take immediate charge of and manage an insolvent's estate for the protection of the whole of his creditors. The order is made in cases where a debtor has committed an act of bankruptcy, and either he or his creditors have filed a bankruptcy petition for the winding-up of his estate.

Sequestration, or **Seqn.**—A process in Scotland by which an insolvent debtor's affairs are investigated, and his estate realised and divided among his creditors. The term is almost equivalent to bankruptcy in England.

Bankruptcy.—A creditor may present a petition in bankruptcy against a debtor, who has done any of the following acts:—Made an assignment or conveyance of property to a trustee for the benefit of creditors generally; made a fraudulent conveyance, gift, delivery, or transfer of any portion of his property; made a conveyance or transfer of his property, or created any charge upon it which would be void as a fraudulent preference should he be adjudged bankrupt; left England, or, being out of England, remained away, or left his residence with intent to defeat or delay his creditors; had his goods seized under execution under legal process; filed a declaration of his inability to pay his debts, or given notice to any of his creditors that he has suspended, or is about to suspend, payment of his debts. The petitions either alone, or with others, must be by creditors for £50 or more, and the act of bankruptcy must have been committed within three months before the presentation of the petition. If the bankrupt's assets represent less than 10s. in the pound on his unsecured liabilities; if he has omitted to keep usual and proper accounts within three years of his bankruptcy; if he has continued to trade after knowing himself to be insolvent; if he has contracted any debt, provable in bankruptcy, without having at the time of contracting it, any reasonable expectation of being able to pay; if he has failed to account satisfactorily for any deficiency of assets; if he has brought on, or contributed to, his bankruptcy by rash or hazardous speculation, or by unjustifiable extravagance, or by gambling, or by culpable neglect of

business; if he has caused unnecessary expense to creditors by frivolous and vexatious defences to actions; if he has caused unjustifiable expense by bringing frivolous or vexatious actions within three months of the receiving order; if he has given undue preference to any creditor when unable to pay his debts, and within three months of the receiving order; if he has incurred liabilities within three months of the receiving order, in order to reduce his assets to 10s. in the pound on the unsecured liabilities; if he has previously been adjudged bankrupt, or has made a composition or arrangement with his creditors; or if he has been convicted of any fraud or fraudulent breach of trust—the Court may refuse his discharge; suspend his discharge for not less than two years; suspend his discharge until a dividend of not less than 10s. in the pound has been paid; or require the bankrupt to consent to judgment being entered against him for any unsatisfied balance of the debts provable in the bankruptcy, such balance to be paid out of the future earnings or after-acquired property. An undischarged bankrupt, who obtains credit for £20, or upwards, without disclosing that he is undischarged, is guilty of a misdemeanour, and may be punished accordingly. A personwho has been adjudged bankrupt, and who has not had his bankruptcy annulled, or obtained from the Court a certificate that his bankruptcy was caused by misfortune without misconduct on his part, cannot for a period of five years from the date of his discharge, sit or vote in the House of Lords or Commons, or on any committee; be appointed or act as Justice of the Peace; be called to or hold the office of Mayor, Alderman, or Councillor, Poor Law Guardian, Overseer, member of a Sanitary Authority, School, Highway, Poor, or Burial Board, or Select Vestry, or be elected to or hold the office of County Councillor.

Bill of Sale or **B/S.**—A document transferring the right to certain goods from one person to another.

Bill of Lading or **B/L.**—A bill of lading is a negotiable document, and is a memorandum signed by a ship's master acknowledging the shipment of goods, and undertaking to deliver them at a port mentioned to a person named on payment of certain charges—"The act of God, the King's enemies, fire, and all and every other dangers and accidents of the seas, rivers, and navigation of whatever nature and kind soever excepted." The master and the shipowner are severally liable upon the bill of lading. It is a negotiable document on which banks or others advance money. A master may deliver the goods mentioned in the bill of lading to any trustworthy person to be kept until the bill is presented in the event of its not being presented on the arrival of the ship. The endorser of a bill, who is a *bonâ-fide* purchaser of the goods mentioned therein, becomes as much the owner of the goods as if they had been actually delivered, and may exercise any rights of action for breach of contract that had previously arisen. An endorsee's liability terminates upon his endorsement of the bill to some one else if such endorsement be made before the freight has arrived. Bills of lading are drawn on stamped paper, and in sets of three or more. One is for the use of the captain, and the others for the shipper, who, by means of them, gives a title to the consignee or other person for whom the goods are consigned.

Dock Warrants-Certificates issued by Dock Companies which declare that certain goods are deposited with them.

Tonnage.— The tonnage of goods and stores is taken sometimes by weight, and sometimes by measurement; and that method is allowed to the vessel which yields the most tonnage. In tonnage by weight 20cwt. make one ton. In tonnage by measurement, 40 cubic feet are equal to one ton. All carriages, or other stores, to be measured by tonnage, are taken to pieces, and packed in the manner which will occupy the least room on

board ship. All ordnance, whether brass or iron, is taken in tonnage by its actual weight. Musket-cartridges in barrels or boxes, all ammunition in boxes, and other articles of great weight, are taken in tonnage according to their actual weight.

Lighterage.— The price paid for loading or unloading large vessels which cannot approach the shore. Some ships, either on account of their size, shallow water, want of room, or other reason, cannot conveniently dock or go close to the shore, and smaller boats or lighters have to convey the merchandise between the large vessel and the shore.

Carriers.—It has been laid down as a good law that a carrier is entitled to demand prepayment for the conveyance of goods, and that he may refuse to carry them until he receive payment. Should he, however, waive this right, he will not be able to recover the amount due for carriage until the goods have been actually delivered by him to the consignee.

Demurrage-An allowance made to the owners of a ship, railway truck, etc., for delay or detention beyond the customary or appointed time.

The demurrage has to be paid by the party who has caused the delay.

Advice Note-The notice of arrival of goods at a railway station, dock, or wharf, which states the consignment is waiting orders as to the disposal, and intimating that a charge will eb made if the goods are not removed within a given time.

Stoppage in Transitu. — Where a person has consigned goods by land or water carriage to another, who may be in insolvent circumstances, the consignor, or the person sending the goods, may countermand their delivery, and *stop them in their passage* which is termed *stopping in transitu.*

Warrant.—A receipt for goods which have been deposited in a warehouse, showing date of entry and name of owners. A warrant for goods must bear a threepenny stamp. Where a carman having orders to deliver goods to a certain person, by mistake delivered them to another person who appropriated them to his own use, it was held at the trial that the carman did not part with the property in the goods by delivering them to the wrong person, and that the latter, by appropriating them to his own use, had been guilty of larceny. In a more recent case, however, where a case of champagne had been delivered to the wrong person, who, believing that the case had been sent as a present from some unknown friend, had appropriated the champagne to his own use, it was held that the value of the goods could not be recovered from the party to whom the case had been thus wrongly delivered.

Chop. — The word "chop" means a brand or trade mark. It is customary for merchants in the Eastern trade, especially the Chinese, to put a distinguishing "chop," usually in native characters, upon each of the various makes of goods they deal in, so that the natives who would not understand our marks may, when ordering, name the "chop" required.

These fancy designations or brands were first invented by Chinese merchants, and are bestowed on their teas after they have been made up into parcels of so many hundred chests. Therefore teas of the same "chop" are supposed to be from the same bulk and of uniform quality.

Italian Warehousemen. — Few persons know the origin of this name, but it is really an echo from the 12th and 13th centuries, when many of the grocers, or "pepperers" in London were Italian refugees. The "Italian," or double-entry system of book-keeping, was another notable importation from the same old mercantile country.

Factors and Agents.—A factor is a man who buys and sells in his own name, and thus differs from a mere agent. The term is, however, only

used nowadays for certain home trades, as corn factor, cheese factor, hop factor, and a few others, and "Purchasing Agent" has come into more ordinary use.

Agents and Travellers.—There are several kinds of agents, and the extent of an agent's authority depends upon the class to which he belongs. A particular agent is one engaged to do a particular thing for his principal, and if he exceeds his authority his principal is not bound by his act. A general agent is one empowered to act in a large number of matters for his employer, and if he exceeds his authority, but does not go outside the ordinary scope of his agency, his principal is bound.

For instance, a firm is ordinarily bound by the terms made by their traveller or representative, when he takes an order; but after the goods are supplied, and the buyer has received an invoice from the firm, the part of the traveller ceases, unless he can show special authority to deal with any question as to quality, resale, or return of the goods or any portion.

If the traveller has no such special or apparent authority the firm cannot be held liable for any settlement he may make, but the customer will be responsible, and it is therefore highly important that he, in such cases, arrange direct with the firm.

After an agent's authority has been withdrawn his principal may still be held liable for his acts, until such revocation of authority and agency has been made known to those with whom the agent or his principal has been doing business.

Where a servant has been in the habit of purchasing goods for his master upon terms of credit, the principal will be held liable, even in cases where the servant has bought goods on credit without the knowledge or authority of the principal. It has been laid down that if a man send his servant with ready money to buy goods, and the servant buy upon credit, the master is not chargeable. But if the servant usually buy for the master upon credit, and the servant buy some things without the master's order, yet, if the master were trusted by the trader, he is liable for the debt thus incurred.

Either the agent or the principal may sue upon a contract entered into by an agent in his own name for an undisclosed principal. An agent must avoid mixing his own property with that of his employer, and must produce just and true accounts to his principal when required to do so. No agent is entitled to take a secret profit, that is to say, a profit in connection with his agency, without the knowledge and consent of his principal. Discounts given by tradesmen to agents may be recovered by the principal. The house agent who lets a house for another to a person whom he knows to be insolvent, or who is generally known to be insolvent, may be held responsible for damages to his employer.

No contract for the remuneration of a servant or agent of any person engaged in any trade or undertaking, by a share of the profits accruing therefrom, does of itself render such servant or agent responsible as a partner therein, nor give him the rights of a partner.

A mercantile or other agent may be appointed by mere words, and he may act for his principal and make binding contracts without having a written authority to do so.

MEMORANDUM OF GOODS ORDERED.

Sold to W. Brown, Grocer, High Street.

.....

.....

.....

.....

.....

Terms .....

Price.....

Discount .....

Carriage .....

Packages .....

Traveller's Name.....

On behalf of .....

Date.....

Tradesmen buying goods might avoid many disputes if travellers were asked to fill up a form something like above:—Quantities, sorts, prices, and other conditions named by word of mouth only, are often misunderstood, forgotten, or ignored before the day of settlement arrives. Death or absence of principals, change of travellers, alterations in terms are constantly happening. Every trader therefore, would do well to have a supply of these forms printed in book form for travellers to fill up and sign. Any other promises as to sole agency, printed circulars, advertising, goods supplied on sale or return, guarantees as to purity, &c., should always be added in writing.

Co tracts.—It is well known that the Statute of Frauds passed in the time of Charles II. affects in an important degree most contracts for the sale of goods, but the exact wording and bearing are probably not as widely known among commercial men as could be wished; we, therefore, append its purport. The 17th Section enacts that no contract for the sale of any goods, wares or merchandises, for the price of £10 sterling or upwards, shall be allowed to be good except the buyer shall first accept part of the bargain, or on payment; or, thirdly, unless some memorandum or note in writing of the said bargain be made and signed by the parties to be charged with such contract, or their agents thereunto lawfully authorised.

Where the law requires a contract in writing, it has been laid down in a case tried before the Courts that it may be written in pencil, and need not necessarily be written in ink.

Infants or Minors. — A contract for services entered into by a minor, if beneficial to him, or her, can be enforced, although not liable to an action for the breach of the agreement. In other words, a contract entered into with a person not twenty-one years of age is only enforceable if it be advantageous to the infant, and all contracts made by infants for the repayment of money lent, or to be lent, or for goods that are not necessaries, are absolutely void, and are incapable of ratification upon the infant attaining his majority. In spite of a decision to the contrary, there is no doubt that a promise of marriage made during infancy, and ratified after the person making it has reached full age, affords a good ground of action in event of its non-fulfilment. Persons contracting with infants are liable to have the agreements enforced against them, even though they have no power to enforce them against the infant. *It is important* to remember that shop boys, shop assistants, domestic servants, and others, under twenty-one, can thus leave their employments without notice, and claim full wages up to time of leaving; but an employer (over twenty-one) must give the customary notice, or pay wages in lieu thereof. An infant not living with his parents may legally contract for the supply of necessaries, such as food, clothing, lodging, and education, suitable to his social position; but an infant cannot be sued upon a bill of exchange or a promissory note that has been given in consideration for necessaries supplied.

Statute of Limitation.—A debt cannot be recovered after it has been owing without acknowledgment for six years; but such periods as the debtor has been abroad are not counted in this limit. Or, if the creditor can, before the expiration of six years, obtain any acknowledgment or any small payment on account, the debt revives.

Guarantees. — No guarantee to answer for the debt or default of another is enforceable at law unless it has been committed to writing. But no such guarantee is to be deemed invalid to support an action or other proceeding against the person by whom such promise was made, by reason only that "the consideration for such promise does not appear in writing, or by any necessary inference from a written document."

No promise to answer for the debt, default, or miscarriage of another, made to a firm consisting of two or more persons, or to a single person trading under the name of a firm, and no promise to answer for the debt, default, or miscarriage of a firm consisting of two or more persons, or of a single person trading under the name of a firm, shall be binding on the person making such promise in respect of anything done or committed to be done, after a change shall have taken place in any one or more of the persons constituting the firm, or in the person trading under the name of a firm, unless the intention of the parties that such promise shall con-

tinue to be binding, notwithstanding such change, shall appear, either by express stipulation or by necessary implication from the nature of the firm or otherwise.

Banking Accounts, Overdrafts, &c.—During the last twenty years Branch Banks have been opened out in almost every business street, and most people must have noticed also that the first thing with a new beginner in business is to open a banking account, as though the possession of a cheque book were the *sine qua non* of prosperity; whereas wholesale houses know it often denotes the contrary. If a new beginner does not apply to the bank spontaneously, he is probably soon waited upon by the manager or other official, shown the advantages offered, and invited to open an account. Now, few will deny that cash is generally safer in a bank than anywhere else, and that a man's house, office, or shop is less likely to be broken into if it be known that he sends all his money to the bank every afternoon. It is also admitted that, in remitting payments to distant places, a properly crossed cheque offers the safest, readiest, and best way. In many cases a further advantage is that payment by crossed cheque usually allows him a few more days to get his money ready. He may, for instance, post his cheque on a Thursday or Friday, and intend to provide for it with his Saturday's takings. But these are all the advantages we know of, unless there be one in the probability of the bank allowing him an overdraft, or loan of a lump sum, to tide over some unforeseen circumstance, or to speculate with. A man trading up to the full extent of his capital, or possibly beyond it—as he too often does—with every sovereign laid out or anticipated, will be pretty sure to have his calculations upset sooner or later by some unexpected occurrence. To be able then to go to his bankers and explain his trouble may be the readiest way to overcome the crisis. The advance of a loan, or the permission to overdraw to a limited amount when requisite, may be readily granted on the deposit of security, or the guarantee of a friend, or perhaps without either. Where such an overdraft or loan is repaid in a few days or weeks, the cost will have been small, and the benefit great. But, too often, the young trader is tempted to speculate with a loan or overdraft; he thinks he sees a chance of making "a pot of money." He hopes to do so, but hope is a consummate flatterer! Anticipation generally exceeds reality, and the venture often turns out to be a loss instead of a gain, with the result that the monetary advance is not repaid for a long time. "It may be for years, or it may be for ever!" Now, most banks charge 5 or 6 per cent. as interest on a loan, whether it all be drawn out of the bank or not, and they also charge double commission—say ¼ instead of ⅛ per cent.—on the gross turnover of all overdrawn accounts. Interest and commission, therefore, often mean a charge of 10 to 15, or perhaps 20, per cent. for the cash actually overdrawn. How many thousands of respectable-looking traders are to-day sweating under these loans, overdrafts, and charges, and may have been doing so many years, more or less hopeful of extricating themselves? Very few retail businesses can prosper under such conditions. Many succumb, and hence it has become quite common to see the cause of a failure attributed to "lack of capital," and "heavy bank charges." Banks do not meet all their expenses and pay their shareholders 10 to 20 per cent. dividends out of nothing. A bank account, and the giving of crossed cheques by a small trader are, therefore, by no means signs of high business status, or commercial prosperity; more often they betray financial straits. On the other hand, many successful men carrying on larger businesses manage to take care of their own coin, avoid banks; and, by paying cash, or remitting bank-drafts instead of cheques, cut a better figure. They can boast no banking account, so they can wield no cheque book, but they

have no heavy bank charges to provide; their bill file is all the lighter, and their discounts all the heavier.

Renting v. Buying or Building. Another custom, generally more honoured by the breach than by the observance, is that of tradesmen buying or building their own premises. How frequently do we hear of an adventurer, two or three years in business, buying his block of property, or erecting a grand new shop. Sure sign of prosperity, say the ignorant! Not necessarily so, say the experienced. "I hear that —— is going to build," says the wholesale merchant; "if so, he must not owe us much!" Our young trader, of course, thinks it sounds well to hear himself say, "I'm my own landlord, these are my own premises," or to be flattered by his neighbours about his property. But in these days of investment companies, joint stock banks, mortgages, and various other loan societies, such reports are really worth very little, and unless the young trader has a sufficient surplus of capital he had better leave old gentlemen, maiden ladies, trustees, etc., to employ their fortunes in property. There may, however, be cases where necessitous or grasping landlords raise tradesmen's rent faster than business grows, and where relief is only possible by purchasing. Under such circumstances, if the trade seems likely to be permanent and good, the same or adjacent premises equally suitable may possibly be bought to advantage, even with the aid of a private mortgage. We say "private" mortgage, because too often is such money borrowed from a bank, as shown in previous chapter, and merged into the borrower's general trading account, where double commission comes into play. The deposit of deeds and the bank loan may seem easier and more private, but the charges in the long run will be out of all proportion; and, what is equally if not more important, banks are terribly apt to call in their money at the trader's weakest moment, without notice, and even while holding the man's deeds. A private mortgagee, on the contrary, must give six or twelve months' written notice, and this affords the tradesman an opportunity to arrange a mortgage elsewhere. It is highly desirable, also, to consider well, before buying or building a shop, whether the neighbourhood is likely to keep up or go down. The writer knew a grocer who bought premises for £1,800, and paid for same by obtaining £1,000 on a 5 per cent. mortgage, and the other £800 from his trading capital. This overstrained his credit ever afterwards, and he lost most of his discounts, the neighbourhood and its business declined, till the premises could not be let even for £30 per annum, while he had to find £50 yearly interest! So he had not only lost his £800 cash, but ended a miserable existence by failing and dying a pauper! Property buying has proved a pit-fall to many an otherwise shrewd and worthy tradesman, who could have made much better use of the money in active business. Five per cent. from property may well satisfy a capitalist who wants no work, but the most ignorant street hawker would know better than lock up his capital at ten times the rate.

Partnerships. — The exact definition of what constitutes a "partnership" has given rise at different times to many legal complications. The following is a terse definition, and has the recommendation of having been laid down by an English judge, who held that to constitute a partnership the parties must have agreed to carry on business and to share the profit in some way in common.

The number of members who may join in an ordinary partnership is limited to twenty, except in the case of a banker's business, where the number of partners is limited to ten. Where the above number of members is exceeded, the business can only be carried on under the Companies Act, or as a mining company, or under special Act of Parliament. Each member of a partnership is liable for the partnership engagements of the

others, not merely to the extent of the money he has put into the business, but to the full extent of his own private means. A new partner is not necessarily liable for anything done before he joined the firm, and similarly a retiring partner does not necessarily cease to be liable in respect to the debts or obligations incurred before his retirement. A retiring partner may free himself absolutely from existing liabilities by entering into an agreement to that effect between the remaining members of the firm and the creditors. A partnership is dissolved by the death of a partner, not only in respect of the one who has died, but, in the absence of special agreement to the contrary, in respect of all the partners. A judgment creditor for the amount of a private debt incurred by a member of a partnership may obtain an order charging that amount with interest to the partner's share in the business, but, in this event, the remaining partners are entitled, if they think fit, to have the partnership dissolved.

"Any person, being a member of a co-partnership, who shall steal or embezzle any money, goods, or effects, bills, notes, securities, or other property of or belonging to any such co-partnership, shall be liable to be dealt with, tried, convicted, and punished for the same, as if such person had not been or was not a member of such co-partnership."

Sleeping or Dormant Partner.—One who invests money in a business, but does not take any active part in the work, or appear by name as one of the firm. Such a partner is, however, liable in his whole property for the price of goods sold and delivered, etc., as are any of the other partners.

If a partner, after he has ostensibly retired from a business, still receives regularly an agreed proportion of the profits, he is still liable for partnership debts, etc., like any of the other partners. No such liability, however, attaches to him if he receive every year only an agreed fixed sum, which is not dependent upon, or varies with, the actual amount of the profits.

The popularity of the Limited Company form in the conducting of a business now appears to supersede old-fashioned partnerships, and if it will prevent the working of the "cuckoo act" upon unsuspecting partners it is to be hoped that the corporation will become the rule and the private co-partnership the exception in business circles. Everybody can remember one or more instances where the man of ideas has taken a monied partner, only to be ejected from the firm (the same as the rightful owner's egg is ejected from the nest by the cuckoo), when his ideas have all been parted with to the rapacious partner. If the company form of doing business stops contemptible practices of this sort it should be joyfully hailed as a blessing in disguise, but can it do so? Can the pigeon ever be completely protected from the hawk?

Limited Liability Companies.—*Limited Ld. or Ltd.* — All companies and firms having the word *Limited* at the end of their names are *Limited Liability Companies*, which means that the shareholders are only liable for the subscribed amount of their shares should the concern turn bankrupt or be unable to pay its debts. The word "Limited" is therefore required by Act of Parliament to be appended to their titles, so that the public may know them.

Shareholders in companies *not limited* are, of course, liable to their last penny for the debts of the concerns they are connected with.

The origin of joint-stock enterprise was that persons of small capital could join together in large enterprises. Such enterprises they saw in railway, dock, bank, and insurance companies. In 1862, to assist the trade of the country in joint-stock enterprise, the Government passed certain Acts which limited the liability of the shareholders to the amount they subscribed. That was taken advantage of by firms where several brothers had sons or other relatives coming into the firm, for thereby they were able to transfer

shares from one partner to another without having to alter the partnership deed.

Any seven or more persons associated for any lawful purpose may, by subscribing their name to a Memorandum of Association, and complying with the requisitions as to registration, form an Incorporated Company with or without liability. Both the Memorandum of Association and the Articles of Association must be signed by each subscriber in the presence of, and be attested by, at least one witness.

The *ad valorem* fee on the registration of a company having a capital divided into shares, where the amount of capital does not exceed £2,000, is £2 (minimum fee), an extra £1 being charged for each succeeding thousand up to £5,000. The Memorandum and Articles of Association must each bear a deed stamp of 10s.; and there is also to be paid an *ad valorem* stamp duty of 2s. per cent. on the nominal share capital. There is also a fee of 5s. charged for registering any document other than the Memorandum of Association. There is no necessity for employing a solicitor. To register a limited company, get a blank form from a law stationer, price 2d. Be very careful in describing the objects of the company, or you may easily find yourself doing what you are not legally entitled to do. Better see how some other similar business is described. To get that information you must pay 1s. at Somerset House to see the memorandum of such an association.

A very handy little book, giving full particulars on company forming, is published by Effingham Wilson, Royal Exchange, London, price 1s. 6d.

Every registered company must keep a register of its members, giving their names, addresses, and occupation, together with the number of each share held, and the amount paid thereon, as well as the date on which each name was entered in the register, and the date at which a person ceased to be a member. The penalty for non-compliance with this provision is £5 per day. Such register of members, commencing from the date of registration of the company, must be kept at the registered office of the company, and must for at least two hours on each business day be open to the inspection of any member gratis, and to the inspection of any other person on the payment of 1s., or such less sum as the company may have prescribed. Every member or other person may acquire a copy of such register, or of such list or summary of members, on payment of 6d. for every 100 words required to be copied.

The Bill of 1862 was never expected to extend as it has done. Company promoting soon began to be looked upon as a profitable enterprise. Noblemen and titled gentry have easily been found willing, for a consideration, to add their names to prospectuses. The public were generously invited to participate in the boons offered, and the public bought freely, for the wily promoters soon knew more of their ways than any colley dog knows about sheep. The consequences have been that hundreds of companies have been launched which were doomed to failure. Private firms in a hopeless state of insolvency have often succeeded in turning themselves into companies ,and either by giving their creditors paid-up shares instead of cash, or, by issuing lying prospectuses, have inveigled the public into concerns utterly rotten and worthless, and sometimes these two methods have been adroitly blended.

"*One Man Companies.*" — Many a man, practically bankrupt, has puffed himself, his wife, and some of his children into a limited liability company, and raised money, sometimes by issuing mortgage debentures to the silly public and keeping the ordinary shares and management to himself and family, and sometimes by issuing the latter to the public and keeping the former to himself.

A curiosity in company promoting was the registration of a company in Dublin a short time ago, with shares of 1d. each. The company was registered with the title of the Jehol

Mining Company, Limited, to take or otherwise acquire concessions, etc., for any public or private undertaking in Asia, *or elsewhere*!—a pretty wide scope of operations. This company, which had powers to undertake business all over the world, had a capital of £2,500, in 600,000 shares of one penny each. The qualification of the directors was 1,000 shares each, which looks a large sum until it is expressed in its monetary value of £4 3s. 4d.

Indeed, the rage for the company form of business has pervaded all ranks of society till there is scarcely a trader with a ten-year-old business but harbours the ambition of converting it into a company concern; in other words, selling it to the public for a far larger sum than a lifetime of trading would enable him to accumulate.

An amending Act placed upon the Statute Book in 1900 is intended to check some of the corrupt practices in company forming. It provides—

"That the minimum subscriptions upon which the board will go to allotment shall be stated, or, failing this, that the whole of the capital must be subscribed;

"That if this and certain other conditions have not been complied with within forty days after the issue of a prospectus, all subscriptions shall be returned;

"That the company shall not commence business unless the directors have paid up the same proportions on their shares as the public subscribers;

'That no contract made by a company before it is entitled to commence business shall be binding;

"That full particulars of all allotments shall be filed within fourteen days;

"That at the statutory meeting the directors shall report the number of shares alloted, etc., and give an abstract of the receipts and payments on capital account; and

"That mortgages or charges shall be void against the liquidator, or any creditor, unless registered within seven days."

Stock Exchange Quotation.—We often hear of the difficulties some companies find in obtaining the honour of Stock Exchange quotation. This arises from the fact that the Stock Exchange requires to know, before they give a quotation, that a very large proportion of the shares of the company is *bonâ-fide* held by the public. Such quotations certainly facilitate the buying and selling of stocks and shares, but it also opens the door to an amount of gambling in shares, almost as bad as what is done at Monte Carlo.

In Winding Up companies, wages and salaries are treated as preferential claims.

Subject to the retention of such a sum as may appear necessary for the costs of administration, the liquidator of a company has to discharge forthwith the following debts: The salary or wages of any clerk or servant not exceeding £50 each person, for services rendered to the company during four months before the commencement of the winding up, and wages of workmen for services rendered to the company during two months before the commencement of the winding up.

Bears.—A "*Bear*" is a speculator who sells, for delivery on a certain future date, stocks, shares, merchandise, or other securities which he does not possess ,and has not bought, but sells in the expectation of being able to buy them at a lower price before the delivery date arrives, and so make a profit.

Bulls.—A "*Bull*" is a person who contracts to buy stocks, shares, merchandise, etc., in the expectation of being able to sell them at a higher price before the settlement day arrives, when he has to pay for them. A '*Bull*,' therefore, is one who buys for a rise in price, and a "*Bear*" one who sells for a fall in price.

Bucket Shop.—A name given to the offices of *outside* stock-brokers, *i.e.*, those who are not members of the Stock Exchange, who try to mislead and defraud the public by issuing touting circulars, advertisements, etc., professing to show how £5 can easily

be turned into a hundred or more in a few days. Many of them practically keep all the money that is sent to them, and never return a penny.

Cornering. — Cornering, in Stock Exchange parlance, is an operation by which a scarcity of stock is created, thus producing a fictitious market, and preventing a dealer from obtaining what he has previously sold except at greatly enhanced prices. For example, if A sells B a number of shares or stock for delivery on a certain day, and finds he is unable to deliver them, B can have the securities publicly bought in by the secretary to the committee, or by the clerks of the "house." The sellers of such securities under the circumtances necessarily raise the prices severely against A, who has to pay the abnormally enhanced price. A is then said to be cornered.

Rig.—To "rig" a market means forcing up the price of any security or commodity without regard to its real value. Rigging a market is usually effected by secretly buying up such a quantity of any security as will produce an artificial or temporary scarcity, until the price (owing to the demand being greater than the supply) is enhanced far above the real value of the security, thus enabling the "Riggers" to resell their holdings suddenly at a great profit.

Stag.—A Stock Exchange expression for a person who applies for shares in any new company, with the sole object of selling as soon as a premium is obtainable, and never intending to hold, or even fully subscribe for the shares. Such a person is said to be stagging the market.

Trade Marks. — To obtain the exclusive use of a trade mark in Great Britain and Ireland (and the same with most other countries) it must be registered. The Government makes a rigorous investigation before granting registration, and nothing resembling anything already registered for the same goods is allowed. Further, neither surname of existing individuals, geographical expressions or names, pictorial representations of the goods to which the mark is applied, Royal or national arms, flags, the Royal crown, nor portraits of persons (without their consent) are registrable. (See *Coats of Arms.*)

Trade-marks are protected by registration in almost every civilised state and colony, except China, Japan, Persia, and Afghanistan.

A form of application may be obtained at any large Post Office, and, when filled up, should be sent along with a 5s. stamp to the Comptroller of Trade Marks, 28, Southampton Buildings, Chancery Lane, London, W.C.

If the mark is accepted, the applicant will be asked to send a wood block or electrotype of the mark for insertion in the *Trade Marks Journal.*

Two months after this, if no one has objected to the mark, the applicant will be asked to send the registration fee, 20s.

(See also "Merchandise Marks Act," near end of book.

Coats of Arms.—It will be in the recollection of many that the Government recently prohibited the use of the Royal Arms by persons not having written authority to display them. The same rule applies to the arms of the various counties and boroughs. Except by Royal licence, no person has the right to assume any heraldic device, unless by sanction of Heralds' College, and the payment of a yearly duty; and no tradesman has any more right to use the coat of arms of the borough or county in which he resides on anything he issues in the way of trade, than he has to print thereon the arms of the lord-lieutenant of the county, which, of course, he would never think of doing. As this rule is frequently infringed, we give the information as a caution, else some persons might find themselves possessed of a large quantity of printed matter against the issue of which they run the risk of receiving an injunction in Chancery, or some other equally disagreeable process at law.

Prize Medals and Certificates.—It is illegal for anyone to falsely represent that he has obtained a medal or certificate at any exhibition, or to falsely pretend that any article sold or exposed for sale has been made by any process invented by, or has been made by, a person who in respect thereof has obtained an exhibition medal or certificate.

Expired Patents. — It is not an offence to represent an article as "patented" when the patent has lapsed.

Fires—How Caused.—The most frequent causes of fire are:—

Stoves introduced into rooms previously unprovided with them, without proper advice.

Workmen allowed to carry out repairs and alterations without proper superintendence, fires being lit without fenders or guards, or candles used without candlesticks.

Fires lit in grates not previously used, or disused for a long period, the flues not having been first examined.

Raking out the remains of the fire before retiring for the night. This is a most dangerous practice.

Whatever quantity of coals remain in the grate, they burn out without danger; but if raked out upon the hearthstone they heat the stone, under which the builders frequently leave portions of timber—these become ignited, and the building is destroyed.

Chimneys not being thoroughly swept. This should be done at fixed periods, and especially before the return of a family after a long absence.

Gas is as valuable a protection against fire as candles, oil, and other movable lights are dangerous, but nevertheless it requires attention. If a smell of gas is perceived, and no tap is found open, there must be an escape; the pipes then should be carefully examined throughout, and, where necessary, repaired. A tap should be fixed upon the main (outside the building, if not inconvenient), and it should be turned off at night by some competent person. Gas should never be in the house after the inmates have gone to bed.

Matches often take fire from gas or sun heat, or fall from shelves and ignite. Lying about the floor they are trodden upon, and by this and other means ignited.

Clothes hanging before the fire.

Wood left in the kitchen range to dry for lighting fires in the morning.

Reading in bed.

These and similar acts of carelessness and causes of mischief should be guarded against by an inspection of the house by a trustworthy person after the family have retired to rest.

It cannot be too strongly impressed upon the public that, in case of fire, each person should immediately run for water, and continue to fetch it by any means so long as there is hope of arresting the flames, but at the same time *all doors and windows must be closely shut.* When all hope of stopping the fire is at an end, *excluding the air* must be relied upon; a fire may thus be confined to one room, giving time for the arrival of the engines.

If the fire has already obtained headway, try to save property. The policy-holder who makes no effort to save some of his property, or who declines his neighbours' offers of help, lays himself open to the charge of incendiarism.

Act, during and after the fire, as if there were no insurance. When the fire is extinguished, look carefully after the saved property. Bear in mind that the underwriters undertake to pay you only the damage by fire, not the damage by your neglect. What remains after the fire is yours, not the underwriters'. Remove goods to a dry place, and separate the damaged and undamaged portions. Protect from rains and dews and dust with tarpaulins or canvas, if it is not possible to find better shelter. Disconnect or plug up pipes in the damaged part of the building. Wipe and cover machinery. Dry floors, furniture, counters, shelving, and

other fixtures. Guard against thieves and malicious persons, and get everything in good shape for the adjustment of your loss.

A tenant is liable for rent though his premises have been burnt down, except in Scotland.

An occupier of premises within the limits of most towns is liable to a penalty not exceeding 20s. if any chimney on his premises be found to be on fire.

Health & Ailments. See also p. 332). —The human constitution has its certain and definite laws, and among them cleanliness, cheerfulness, and goodwill are of the first importance, in teaching his pupils the science of health, Esculapius, the great master of medicine, contended that men could not be healthy without cleanliness. The want of it is a fault that admits of no excuse. The uncleanly man is a nuisance to himself and a thorn in the side of his neighbours. Frequent washing promotes perspiration, enlivens the spirits, and causes the blood to course more freely through the veins. Avoid over indulgence in food, but take necessary nourishment at regular intervals; guard against changes of temperature by providing a corresponding alteration in clothing; do not commence the day's work upon an empty stomach; welcome light and sunshine into your sleeping and living rooms, as they are necessary for a healthy condition of the air we breathe. Remember that regular habits, a liberal diet, and plenty of exercise, are the best safeguards against disease. Fresh air is an important agent in keeping the blood pure, enabling it to circulate and impart life power to the system.

Avoid beginning a journey without taking breakfast.

Clothes, such as flannel and linen, worn next to the skin, should be changed often. Frequent change of clothing greatly promotes the secretion from the skin, so necessary to health. Never sleep in flannels or other clothing worn during the day.

Avoid going into a cold atmosphere immediately after taking hot drinks.

The head should be kept cool by temperance; the feet warmed by exercise; rise early, and retire early to bed.

Extra clothing should be worn as autumn approaches, and it is unwise, even dangerous to cast off a garment until spring is well advanced.

Exercise is best taken in some employment for an object. Begin and end slowly, and it is well to carry it to the point of fatigue, if the system soon rallies from it; but no greater fatigue should be incurred than a night's rest will remove.

Never lean with the back upon anything that is cold.

Avoid riding in an open carriage, or near the window of a train, when heated with exercise of any kind; it is dangerous to health and even to life.

Never go to bed with damp or cold feet.

Refreshing sleep may be promoted by keeping the room well ventilated; allow a free passage of air up the chimney, and open the window about two inches at the top, except in extremely cold or foggy weather.

Avoid keeping the mouth open when sleeping in a cold room; therefore establish the habit of breathing through the nose, and not the mouth.

Bathe regularly. Unless the skin is in active condition the cold will close the pores, and thus assist the inroads of disease.

Never bathe when a feeling of fatigue is present, nor soon after eating, but only when the stomach is empty, or nearly so; and the bath-room should be of a comfortable temperature. After the bath is taken and the skin thoroughly dried, the surface of the body should be briskly rubbed for a few minutes with the dry hands.

Avoid much speaking when suffering from hoarseness, lest difficulties be produced in the throat, and the voice be permanently injured or lost.

Avoid getting cold at the chest or back, particularly between the shoulder-blades; therefore, keep these parts

well protected, but never keep the back exposed to the fire after it has become comfortably warm.

Pay daily attention to the state of the bowels, as constipation leads to many evils. An extra tumbler or two of cold water will quickly cleanse and strengthen the system.

Impure water, or that which has stood in a lead pipe overnight, should never be used. At least a bucketful should be allowed to run before taking any for domestic purposes.

Avoid tea that has been boiled; also remember that when it stands for any length of time in a tin teapot it becomes poisonous.

When fatigued, drink a glass of hot milk. It is a far better and more permanent stimulant than spirits or beer. When taking milk as a beverage, either hot or cold, drink it in sips, so that it will easily digest.

Avoid standing still in cold weather, particularly so after any degree of exercise.

Avoid standing in a draught or cold wind, or upon ice or snow.

Avoid keeping the mouth open when passing from a warm atmosphere into a cold one; but breathe through the nose, so that the air may be warmed ere it reaches the lungs.

Boils.— Boracic acid applied to boils before or after incision will promptly arrest their development.

Burns.— Oil of turpentine applied to a burn of the 1st, 2nd, or 3rd degree will at once relieve the pain, and promote rapid healing. A thin layer of absorbent cotton is placed over the burn, and this is saturated with turpentine, what is lost in evaporation being replaced. When large blisters are formed, these are opened the second or third day. The turpentine should be kept off the healthy skin, or it will cause pain.

Bleeding at the Nose.—(1) Roll up a piece of paper, and press it under the upper lip. (2) In obstinate cases blow a little gum-arabic up the nostrils through a quill, which will immediately stop the discharge; powdered alum is also good. (3) Pressure by the finger over the small artery near the ala (wing) of the nose, on the side where the blood is flowing, is said to arrest the hemorrhage immediately.

Jaundice.— Use pig-bile tabloids (better than those of ox-bile).

Cough Mixture (especially during feverish or inflammatory attacks).— 1 fluid ounce each of honey, olive oil, lemon juice, and sweet spirit of nitre. Dose, ½ fluid drachm, several times a day.

Ear-ache Cure.— Take a common tobacco pipe, place a wad of cotton in the bowl, drop upon it 8 or 10 drops of chloroform, and cover with another wad of cotton; place the stem to the affected ear, then blow into the bowl, and in many cases the pain will cease almost immediately. A little cotton-wool is also an easy remedy.

¶ *Wasp Sting Cure.*— A slice of raw onion rubbed on the wound, or if inside the mouth or throat, chewed slowly, and the piece swallowed. The swelling will be checked directly.

Hands and Face.— Dirty and coarse hands, no more than a rough scurvy or pimpley face, cannot be regarded as personal attractions in a grocer or anyone else handling foods. They are generally considered symbols of slothfulness, low breeding, or worse.

To promote softness and whiteness of the skin, mild emollient soaps, or those abounding in oil, should always be used, by which means chaps and chilblains may generally be avoided. The French mottled or Castile soaps, being usually made with olive oil, are perhaps the best.

Frequent applications of a little glycerine after washing and while still damp are also good. If used without some water, glycerine has a drying tendency. (Vaseline is of no use for this trouble.)

The coarse strong soaps, or those abounding in alkali, soon give a rough and scurvy appearance to the

skin, by rendering it dry and brittle, and should be particularly avoided.

When the hands are very dirty a little good soft soap should be used with warm water, which will quickly remove oily and greasy matter.

Fruit stains, etc., are easily taken out by adding either a little vinegar, a little pearlash, a little chloride of lime, or a few drops of oil of vitriol to the water, and the hands should be finally rinsed in a little clean water, but not touched with soap for some hours, or the marks may reappear.

Sweaty hands may be kept nice and dry by rubbing over them a little club moss (Lycopodium) finely powdered.

Warts.— No one handling eatables should have warty hands. The warts look nasty, and can be easily and quickly removed by applying castor oil two or three times a day or night. This is the simplest known remedy, and scarcely ever fails.

They may be burned with nitrate of silver, nitric acid, glacial acetic acid, or caustic potash; a slower removal may be effected by daily touching with dilute acetic acid, or equal parts of dilute muriatic and tincture of iron. They may also be taken out mechanically by means of a small steel instrument like a sharp-edged spoon.

A Lotion for Chapped Hands, Lips or Face.—Mix 10 minims of compound tincture of benzoin, 2 fluid drachms alcohol, 30 minims rose water, 1 fluid drachm glycerine. Apply to the chapped surfaces at night, after they have been washed with warm water and soap, and thoroughly dried.

Grocer's Itch and **Sugar Mites.**—When cane sugar, especially if "raw" or of inferior quality, be kept for any length of time undisturbed or in an unsuitable place, a minute insect or worm, called *Acarus sachari* or cane-sugar beetle, infests it, and renders it dangerous for use. Street boys have been killed by eating raw sugars (dock sugars), and on post-mortem examinations their stomachs have been found actually eaten through by these sugar mites. Now, these mites or eczema also eat the hands of persons constantly working among sugars, or even the cheaper sorts of dried plums, figs, prunes, dates, etc. Grocers' assistants, apprentices, etc., often suffer considerable annoyance and temporary inflammation known as "the grocer's itch."

It usually attacks the wrist or backs of the hands first, but often also the legs of those working among cane sugar.

A good remedy is to soak a sponge or piece of flannel in boiling water and apply it to the affected parts as hot as can be borne. If hot enough two or three successive applications will give immediate relief from the intolerable itching, and if this be repeated once or twice daily a radical cure will probably be effected within a week.

Mr. E. M. Tingle, of Lichfield, writing to *The London Grocer* says: "A common idea is abroad, but quite a wrong one, that the cure of the disease, so far as it affects the skin, will tend to drive it inwards on some more important organ. No such idea ought to be allowed to stand in the way of every endeavour being made to effect a cure. Of course, it is always best in this, as in all diseases, to be guided by the advice of a surgeon.

"In the first stage, where there are heat and swelling, cold water dressing will greatly relieve. When the eruption has appeared it should be dusted with finely powdered starch, white oxide of zinc powder, or chalk.

"For the removal of the scabs, they will be more easily removed if softened with oil or bread and water poultice, or, best of all, poultices of smashed turnips. When the scabs have all been removed, simple ointment like vaseline may be applied. A very valuable ointment is made of the yellow oxide of mercury (yellow precipi-

tate) 1 drachm, oil of sweet almonds 1 drachm, lard 6 drachms. It is often advisable to use tonics at the same time, such as quinine and iron, or phosphorised cod-liver oil, and, if at all possible, get a change of air."

Tea Rot is another disease peculiar to grocers and tea-tasters. It may unfit a man for business for several months, or even years. A fungus usually forms under the finger and toe nails, which causes them to bulge out, and eventually come off. There is little actual pain after the nails come off, but no man is fit for his business while this miserable disease continues; no one will drink his tea, nor even shake hands with him. The bacilli appear to attack the new nails as they appear, so each finger must be well separated from its neighbour. Few doctors seem to understand it, so that we may give the addresses of two:—Dr. Headley Neale, London Road, Leicester, and Dr. Chamberlain, Kettering Road, Northampton.

Poisons and their Antidotes.—In all cases of poisoning procure medical aid at once. In the interval, administer one tablespoonful of mustard, in a cup of tepid water, as an emetic. Ipecacuanha powder or wine, in full doses, will be less disagreeable, if at hand. Follow either emetic with copious draughts of tepid water. If the doctor is not at hand, the following appropriate antidotes should be administered after free vomiting has been induced:—

In cases of iodine, hydrochloric acid or spirits of salts, nitric, sulphuric, or oxalic acids, administer, without delay, chalk, or common whiting, magnesia, or common washing soda, either in milk or water, and continue the use of the antidote until the symptoms abate.

In cases of phosphorous (phosphor paste or the heads of matches), avoid giving oil (as oil is a solvent of phosphorous). The best treatment for this form of poisoning is free purging, and whites of eggs beaten up with magnesia.

Against carbolic acid, give olive and other oils freely, with magnesia.

Caustics, ammonia, lime, soda, or potash are neutralised by weak acids, such as vinegar or lemon juice.

In cases of arsenic and its compounds give tablespoonful doses of dialysed solution of iron, followed by teaspoonful doses every ten minutes.

In cases of lead, mercury, zinc, copper, or antimony, give emetics, white of eggs freely, milk, chalk, magnesia, flour and water.

Animal and vegetable irritants require emetics, purgatives, linseed tea, or barley water.

In cases of irritant gases remove the patient into pure air; administer inhalations of steam.

Against belladonna, chalk and magnesia should be given. Strong tea and coffee should be administered frequently.

In cases of morphia, opium, and any of their preparations on no account allow the patient to sleep; dash cold water over the body, and keep the patient walking about. Apply strong mustard poultices, to the limbs, and the galvanic battery if available.

In cases of prussic acid give carbonate of potash, followed by sulphate of iron: external as for opium.

Alcoholic poisoning is treated with emetics, with cold affusions, and a weak solution of acetate of ammonia, are recommended.

In cases of aconite (sometimes mistaken for horseradish), emetics, then stimulants and animal charcoal. As an emetic, 10, 20, 30 grains of sulphate of zinc (according to age) in water, will be found most effective.

In cases of strychnia or nux vomica, the best treatment for this kind of poisoning consists in keeping up artificial respiration and in administering chloral hydrate (60 grain doses), chloroform, tobacco, ether, or turpentine.

In cases of foxglove (digitalis), give tannin, catechu, kino, or galls.

Poisonous fungi, mussels, etc., call for emetics and castor oil.

Bread Poultice. — Put sufficient bread crumbs into a scalded basin;

just cover with boiling water, and put a plate over it to keep in the heat. When the bread is well soaked, drain and spread on a soft rag. Apply as warm as the patient can bear it.

Charcoal Poultice is useful for foul and bad-smelling ulcers, wounds, etc. Take of bread poultice about four tablespoonfuls, and two tablespoonfuls of linseed meal, and very finely powdered charcoal; mix together, and apply on soft rag or muslin.

Linseed Poultice is prepared by pouring boiling water into a scalded basin, add the best crushed linseed—enough to make a moderately thick paste; stir, and spread upon soft linen or a pocket handkerchief, and apply as warm as it can be borne.

Mustard Poultice is prepared by mixing an equal quantity of best mustard and linseed meal. Mix the mustard, with lukewarm water, into a stiff paste. Mix the meal with boiling water; then add the mustard paste, and thoroughly mix. Place upon muslin or other material, and apply for 20 minutes, or longer if it can be borne.

Rats and Mice.—These may be exterminated in various ways by poison, the chief objection against which is that they retire to their holes to die, and the bodies putrefy, unless removed, which causes at times great expense.

The ordinary exterminators usually employed are traps or pastes, powders, etc., made from arsenic, tartar emetic, nux vomica, etc.

How to Destroy Rats.—(1) A mixture of aniseed, meal, and plaster of Paris. The rodents devour it greedily, and the plaster of Paris being a great absorbent of moisture, hardens into a flinty mass, and—hey presto! the end is near!

(2) Chloride of lime, mixed with water, and poured a few times into the drains and rat holes, will often drive them away; so will ground cayenne.

(3) Take a scoop of oatmeal in one hand and another of fine castor sugar in the other, and pour them down in little heaps on the warehouse floor, then mix them together with the scoops, (taking care not to touch it with the hands) for two nights, and then on third or fourth night add an equal portion of dry plaster of Paris. After eating it the rats will run clean away without returning. Do not place any water for them.

(4) Rats also detest rue, and a bunch of that herb put in their road will often drive them away. Coal tar poured in their runs is often successful.

(5) Smear the rat-holes with tar.

(6) Melt 8 oz. phosphorus in a gallon of water, and add 10 lbs. Indian meal, then rub up gradually, and add butter and sugar.

(7) Get a bottle of phosphorus from a chemist, and spread it on pieces of bread, to be placed in or near the rat-holes.

(8) *Baits for Traps.*—Rats are said to be very fond of powdered cantharides steeped in brandy.

(9) A few drops of the highly-scented oil of rhodium.

(10) Catch one or two alive in a common cage trap, dip them in a pail of common tar, and let them go.

(11) Place fresh oatmeal with a few drops of oil of rhodium in it, near their runs every night for about a week, taking care to handle it as little as possible; then, on seventh or eighth night, mix 1 oz. of nux vomica with 1 lb. of oatmeal and a few drops of rhodium. The nux vomica being a very deadly poison, great care should be observed the night it is laid.

(12) *A German Method.*—Mix together two parts of well bruised common squills and three parts of finely chopped bacon; make these into a stiff mass with as much meal as may be necessary, and bake into small cakes for the rats to eat.

(13) For clearing rats, mice, sparrows, etc., where very numerous, nothing beats a "mongoose,"—mungoose or "moongus" (*Herpestes Griseus*)—or Indian snake-killer; one of these animals is said to do more work than half-a-dozen cats. These grey

ichneumons, although larger than ordinary ferrets, can pass through any rat-hole, are also clever burrowers. They are commonly employed to destroy rats in the West India sugar fields. Wild animal dealers sell them at about a guinea each, and they are occasionally advertised in the *Bazaar*.

(14) But a hungry, half-starved cat (not a sleek, well-fed one) is often worth its weight in gold at killing rats. Once a cat learns from necessity how to wait for and kill rats, it is doubtful whether any other remedy is so effectual and convenient.

How to Destroy Mice.—(1) Use tartar emetic mixed with some favourite food.

(2) Take one part calomel, five parts wheat flour, one part sugar, and one-tenth part of ultramarine. Mix into a fine powder, and place it on a plate. It is a most efficient poison for mice.

(3) Camphor gum in suitable pieces and mixed with seeds will prevent mice injuring the latter; the little animals object to this odour very much.

(4) Mint also is very objectionable to mice.

Crickets — How to Destroy.—Sprinkle a little quicklime near to their haunts. The lime may be laid down overnight and swept away in the morning. In a few days they will probably all be destroyed.

Cockroaches and Beetles. — (1) Strew the roots of black hellebore, at night, in the places infested by these vermin, and they will be found in the morning dead or dying. Black hellebore grows in marshy grounds, and may be had at the herb shops. (2) Put about a quart of water, sweetened with molasses, in a tin wash basin or smooth glazed china bowl. Set it at evening in a place frequented by the beetles. Around the basin put an old piece of carpet, that the beetles can have easy access to the top. They will go down in the water and stay till you come. (3) Take pulverised borax, four parts; flour, one part; mix intimately, and distribute the mixture in cupboards which are frequented by the roaches, or blow it, by means of a bellows, into the holes or cracks that are infested by them. (4) By scattering a handful of fresh cucumber parings about the house. (5) Take carbonic acid and powdered camphor in equal parts; put them in a bottle; they will become fluid. With a painter's brush, of the size called a sash-tool, put the mixture on the cracks or places where the roaches hide; they will come out at once. Then kill. (6) Mix up a quantity of fresh burned plaster of Paris (gypsum, such as is used for making moulds and ornaments) with wheat flour and a little sugar, and distribute on shallow plates and box boards, and place in the corners of the kitchen and pantry, where they frequent. In the darkness they will feast themselves on it. Whether it interferes with their digestion or not is difficult to ascertain, but after three or four nights' renewal of the preparation no cockroaches will be found on the premises. (7) Perhaps the simplest and most practical of all methods is to use "Peterman's Destroyers," as sold by Newbery and Sons, Charterhouse Square, London. (See also "*Beetle Powders*," p. 90.)

Weevils, Moths, etc.—Rice, beans, and other grains, whole or ground, if kept long in bags, bins, etc., are liable to become infested with weevils, which quickly spread all over the shop or warehouse, and are bad to get rid of. To guard against receiving weevily goods into stock, it is a good plan, when possible, to expose the sacks to the sun for half-an-hour or so before taking in, when weevils, if present, will show on the outside, and the goods may be rejected.

Flies.—(See p. 380).

Goodwills. Much misapprehension exists as to what is the goodwill of a business. Lord Eldon said that the goodwill of a trade is nothing more than the probability that the old customers will resort to the old place.

The sale of a business with its goodwill does not of itself prevent the

vendor setting up a fresh business of a similar nature, unless a clause restraining him from doing so be embodied in the contract; so, unless the purchaser of a goodwill contract specifically to the contrary, he cannot prevent the vendor of a business he has bought from starting a similar business next door, or soliciting the custom of his former patrons. All he has power to do is to obtain an injunction restraining the vendor from using the name of the old firm, or from representing to the public that he is trading in connection with, in continuation of, or in succession to, the business which he has, in fact, disposed of. Bearing this in mind, no prudent man will buy a business without protecting himself from the competition of his predecessor within a specified radius. That radius must be reasonable in its limits, or it will not be upheld in a Court of law. And, of course, the above does not prevent the wife, son, or other relative starting up in opposition, unless each has bound him or herself not to do so. The purchaser would also do well to get the signature of the seller to a circular announcing the sale or transfer of the business, and recommending the customers to continue their patronage.

In buying businesses, in the shape of goodwill, fixtures, or stock, great caution is necessary. Has the seller any right to sell? How long has he had it? Every article should be down in writing clearly. Verbal statements are of very little use in case of disputes.

Amongst the businesses most advertised as for sale are small tobacco shops, and it may safely be said that a very large proportion indeed of these are swindles, worked in many cases by organised gangs, which find ready victims amongst the plain working people, who are, in general, the purchasers of these small businesses. A gang of this kind take a number of small shops, put cheap hirelings into them for a few weeks, and "cook" a set of small books for each. Then an advertisement is inserted. In general, some working couple who have saved a few pounds apply, the man proposing to go on with his usual employment and the woman to mind the shop. The stock is duly inspected, the invoices relating to the same being shown in a regular way. A day is appointed for the payment of the purchase money and the handing over of the shop. Between the time of the inspection and the completion of the bargain the stock is entirely changed, utterly worthless goods—cigars, and so on—being substituted for those named in the invoices, when these invoices themselves are not wholly false, which they most frequently are, the stock being supplied by one of the gang who invoices the goods at eight times their real value. Then the fraudulent vendor recommends certain wholesale tradesmen—confederates, of course—whose travellers call immediately the new tenants have taken possession. The whole thing, in fact, in five cases out of ten, is one mass of jugglery and fraud.

Large ready-money businesses, also, often depend on low cutting prices which leave no real profit, and the turnover is inflated or worked up merely to be sold well.

Anyone wanting to sell a *bonâ-fide* concern should offer the purchaser, or his nominee, a month's position as first hand in the shop, so that takings and prices may be verified and an introduction to the customers may be made at the same time.

Stock in Trade.—This phrase includes the goods in stock, and the fittings, furniture, machinery, tools, and other appliances used to carry on any trade or business.

Monies.—*Legal Tender* is the authorised coins or payments that may be legally tendered in payment of a debt. These are: — Gold to any amount, silver up to £2. Pence and halfpence to the value of a shilling, farthings up to sixpence, and Bank of England notes so long as they do not exceed the debt to be paid.—that is, no one can be compelled to give change for Bank of England notes, except the

Bank itself, and then only at the town where the note was issued, "or in London."

Disputed "Settlements."— If a man sends a cheque saying it is in full settlement of all that is due, the creditor has the right to send word back and say that he keeps the cheque, but only on account; in other words, the creditor may keep the money without being bound by the stipulation made by the debtor.

Specie is a name for *coin* as distinguished from *paper* money.

Sterling Money.—The origin of the common practice of designating English money "sterling" is said to be due to the following cause. In the time of Richard Cœur de Lion, money coined in the east part of Germany, became, on account of its purity, in special request in England, and was called Easterling money, as all the inhabitants of that part of Germany were known as Easterlings. This was abbreviated to "sterling," which has remained in use ever since.

Others say that sterling money was so called because anciently there was stamped upon it a bird called a "starling"

Bad Money.—The method of making counterfeit coin is crude in the extreme. Ordinarily, the maker obtains a plaster of Paris mould, that has been tempered with a small quantity of blacklead (plumbago) to prevent it cracking when the molten metal is poured in from the ladle. The plating of the coins is done with a battery, devised with a few jam pots and pieces of metal purchased at a marine store shop. Some wonderful results, equal to Birmingham electro-plating, are obtained from these rough-and-ready batteries.

The methods of coiners and passers of bad money are exposed time after time in the Press, and nothing new can be said on the subject, but the following are a few simple tests by the aid of which the public can detect base coin.

First of all there is the peculiar ring of the true metal and its contrast with that of the false. Every person ought to be able to gauge from sound the true value of a coin. The aptitude is easy enough to acquire, and it should be one of the practical things taught in the Board Schools. The popular way of ringing a coin is to spin it sky-high and let it fall with a bounce on table or counter. This is not always expedient, and, if the ear has been educated, it is not at all necessary. An expert can tell by letting the coin drop an inch or two.

The surfaces of all counterfeit coins of an inferior make are covered with a composition of a greasy nature to prevent the silver from being rubbed off; and it is usual for the utterer to place a small quantity of cigar ash on the coin and then pass his fingers lightly over its surface, in order to give the counterfeit the appearance of having been some time in circulation. Well, if you have a doubtful coin of this nature tendered to you, to test it wet the tip of your thumb, and pass it roughly across the woman side—as coiners say. If the coin is base the worn look will instantly disappear; if genuine, there will be no perceptible difference as a result.

Another simple and effective test is to take the coin in your fingers and attempt to write with it on a piece of slate. If the coin is base you will succeed; if it be genuine you will scratch the slate.

The re-agents found most useful by bank cashiers are strong nitric acid and aqueous silver nitrate solution. Gold coins are unaffected by nitric acid, but those containing much copper turn *green* when the acid touches them; *silver coins* do not reduce silver nitrate, but imitations made from alloys containing lead and other metals turn black when touched by the solution.

Tradesmen who fear being victimised by utterers should set on their counter in a prominent position a "jack" (tester). The very sight of it will scare most of these customers away. A few, however, will wait, and see whether you use it or not. If they find you do when strangers make pur-

chases, you can rely on having a wide berth as far as "smashers" are concerned. Caution is also necessary in accepting coins from neighbours; some of these latter, if not very good judges themselves, will send a doubtful coin to you to see whether you take it, before they give any change to the stranger. Seeing it is from a neighbour, you may unguardedly change it without examination.

When a bad coin, or one diminished otherwise than by reasonable wear, is tendered, you may deface it, but if the coin prove neither counterfeit nor unlawfully diminished you will have to make it good.

In old times, when the penny was made of silver, it was customary to indent it with a deep cross, so that it could be easily broken into halves and quarters, which were called half-pennies, and "four-things"—now farthings.

Copper money wears away rapidly. In a hundred years £100 worth of pence would only be worth about £50, while the same amount of sovereigns would only lose 3½ per cent. of their original value. £100 worth of shillings, on the other hand would be worn to the extent of some £37. The less the value of the coin, the greater its wear and tear, a penny circulating at least 250 times as rapidly as a sovereign.

With some persons a notion prevails that a coin with a hole in it brings "luck" to its possessor; but banks and railway and revenue officials do not seem to entertain that superstition, for they refuse such as damaged coin.

Copper. — The present bronze coinage (penny, halfpenny, and farthing) is composed of 95 parts copper, 4 of tin, and 1 of zinc. The weight of a penny is one-third, of the halfpenny one-fifth, and of the farthing one-tenth of an ounce avoirdupois, *approximately*. Further, the halfpenny is one inch in diameter.

The word "penny" came from the German *pfennig* and "florin" originated from Florence in Italy.

The figure of Britannia first appeared on the copper coins 300 years ago.

It is estimated that on an average each penny in circulation changes hands eleven times a week.

On every ton of pennies produced the Mint makes a profit of over £300.

Silver.—Shillings were first coined in England A.D. 1505.

On every shilling turned out the Mint makes a profit of nearly 3d.

Gold. — Standard gold contains eleven-twelfths of fine metal and one-twelfth of alloy.

Sovereigns were first issued about 1489, when they were worth the twenty-fourth part of 1 lb. of gold. In 1542 they were worth 30s. a piece. In 1550 they were worth 24s. In 1817 they came down to 20s., the value at which they have since remained. The amount of gold actually in circulation in this country is estimated to be £110,000,000 sterling, or about 865 tons.

Only 37 per cent. of the sovereigns in currency are of the proper weight.

The *guinea* piece was first coined in 1663, and was so-called because the gold from which it was made came from the *Guinea Coast* of Africa.

Bank of England Notes.—Banknote paper has long been made at Portal's Mills, Laverstoke, Hants. It is made from new white linen cuttings, never from rags or anything that has been worn. The peculiar crisp and crackling sound given forth by a bank note on handling it is from using new linen in the manufacture. So carefully is the paper prepared that even the number of dips into the pulp made by each workman is registered on a dial by machinery. The wavy water marks are made by fixing wires twisted into the approved design on the face of the mould, so that when the pulp settles down it is of necessity thinner on the wire design than on any other part of the sheet. The water mark lettering is engraved in a steel-face die, which is afterwards hardened, and is then applied as a punch to stamp the patterns out of plates of sheet brass. Each sheet

is sufficient to make two notes placed longwise, and after they are printed it has to be cut. Hence, every Bank of England note has three rough sides or "deckled edges." A bank note is made thicker at the left-hand corner, to enable it to retain a keener impression of the vignette there. This dignified figure of Britannia, by Maclise, is considered an excellent work of art. A note is also thicker in the dark shadows of the centre letters and beneath the figures at the ends, whereas counterfeit notes are invariably of one thickness throughout.

It is made so thin that an erasure is almost impossible, and yet so strong that a note leaf with the addition of a single grain of size will support half a hundredweight without tearing.

A genuine note may thus be known by the peculiar white colour of the paper, by its strength and toughness, its feel, the water mark, and by careful observation of the lettering, numbering, and other details.

The secret marks by which forgeries are so rapidly detected are constantly being changed. The microscope will reveal many such peculiarities to an observant eye.

The "sinister" half of a bank note is the left-hand side, and the right-hand side (that containing the signature) is called the "dexter" half.

Other peculiarities are:—

The word Company preceding the signature is spelt "Compa." This is an abbreviation of the Italian word *Compagnia* and, like the "*Florin*" (Florence) reminds us of the fact that Italy was England's first instructor in banking. Lombard Street (the street of banks in London) and the signs, £ s. d. (*libri, solidi, and denari*) also testify to the same origin.

The principal letters in notes of different denominations are also differently formed. For example: The "L" in London is not the same in a £5 note as in a £10, or in a £10 as in a £20, or in a £20 as in a £50 note, and so on.

The Bank is only allowed by its charter to issue such a number of notes as shall equal the securities deposited by Government against its debt to the Bank, and the value of bullion sold as silver, against which notes are issued.

The fiduciary issue is fixed for the present at £16,500,000.

As soon as a note finds its way back to the Bank, even if it has only been issued a few hours, it is cancelled.

Such notes pour into the Bank at the rate of about 50,000 a day, and may represent about four million pounds in value. They are kept for five years, and then burned. There is a burning every week.

The stock of Bank of England notes which are paid in five years fills 13,400 boxes, which, if placed side by side, would reach over two miles. If the notes themselves were placed in a pile they would reach to a height of five miles. They weigh ninety tons, and represent 1,750 millions sterling.

Private Marks.—Business people often make use of various devices to prevent the cost and selling-price mark of their goods from becoming known except to themselves and their salesmen. The device most frequently consists of some word or phrase containing ten different letters or characters (no two alike), and each representing a figure. Thus, take the word

C U M B E R L A N D
1 2 3 4 5 6 7 8 9 0

If it is required to write the cost, say 9s. 11d., and the selling-price, say 15s., the proper mark will be

$$\frac{nck}{ce}$$

An extra letter, called a repeater, is used to prevent the repetition of any letter. Hence, instead of writing £1 4s 4d., according to the above key, which would be C/B/B, the letter K, or any other letter not found in the key could be used, which would make the mark C/B/K. Fractions may be written thus—$48\frac{3}{4} = \frac{Ba}{b}$

The following words and phrases afford examples of marking keys:—

Be Quick Now.	Bible Words.
Black Horse.	Blackstone.
Brown Sugar.	Cash Profit.
Charleston.	Elucidator.
Fish Tackle.	Gainful Job.
Gas Fixture.	Gold Watches.
Greyhounds.	Handy Girls.
Hard Moneys.	Importance.
Joiners Tax.	Misfortune.
Now Be Sharp.	Of Industry.
Pay Customer.	Purchasing.
Ramsey Town.	Send for Him.
So Friendly.	Vanderbilts.

For practice, write down a hundred imaginary prices, and change to letters, using any of the above keys.

Receipts.—The giving of receipts for money, bills, or cheques, is optional between the payer and receiver. The law does not require it, but the payer can legally insist upon a receipt being given him—the form being regulated by custom. Some people, of an economical turn of mind, when giving a cheque ask for a stamp instead of a receipt, or, in remitting an account by post, deduct 2d. from the nett amount (1d. for receipt stamp and 1d. for postage of receipt), adding that no receipt is required. In Courts, oral evidence of payment is legal proof, but the possession of a receipt is only *primâ facie* evidence that money has been paid, and may be explained away. If a written or printed acknowledgment be given for cash, cheque, promissory note, bill, I.O.U., or cash order, for an amount of 40s. or upwards, a penny stamp is imperative, and should be written across or otherwise cancelled before delivery to the payer, or the receipt is afterwards useless without a £10 *penalty* stamp.

Even in the case of agents, travellers, collectors, and carmen paying over monies to their employers, any written acknowledgment or initialing of books that may be given requires a stamp, unless the book remains in the custody of the employer. In 1899 penalties amounting to near £500 were inflicted on the Carlton Bank for initialing a customer's book without using stamps. As stated above, if a written acknowledgment be given for any payment of 40s. or upwards, a stamp should be used. No stamp is necessary for money received merely on deposit, and not antecedently due as in the case of Banks, etc.

Mr. George Banner, of Liverpool elicited the following important information from the Inland Revenue Department, and the letter will be read with much interest by all concerned in charitable enterprises:—

Inland Revenue, Somerset House,
London, W.C., 3rd March, 1896.

Sir,—In reply to your letter, dated the 24th ultimo, I am directed by the Board of Inland Revenue to acquaint you that every acknowledgment of the payment of money amounting to £2 or upwards, whether such payment is made voluntarily or otherwise, is liable to duty. It is not, however, the practice of the Board to proceed for the recovery of a penalty in the case of an unstamped receipt given for a voluntary donation or subscription to a charity, where the donor or subscriber derives no personal benefit from the donation or subscription. —I am, sir, your obedient servant,

W. H. Cousins, Secretary.

The following also are exceptions, and do not require stamping:—"I.O.U. Five pounds, John Jones"; receipts for Government taxes or duties; receipts by officers, seamen, marines, or soldiers.

In the Isle of Man no receipt stamps are required, and cheque forms there do not require stamps.

Receipts should be kept for six years from the date of payment, after which period no action can be brought concerning the goods, etc, received.

Voucher. — Any document or writing in proof of the payment or receipt of money or goods.

Shop Work.—*Sweeping the Shop.* —Do you know how to sweep? Presumably you do, and the chances are that you do it neatly and intelligently. It happens, however, that some shops are not swept either neatly or intelligently, even yet, and so a remark or

two may be in order. A clean shop is a customer's delight.

The question is how to remove the dust from the floor without leaving it in the air, whence it, or a portion of it, will find its way to the goods. Dampness in some form must be brought into play to keep the dust down. How shall this be done? The old-fashioned way is to sprinkle water on the floor. It is thrown about from a cup or a sponge, or distributed with a garden sprinkling pot. A very expert person might succeed with the pot in spreading the water quite evenly over the floor without making any very deep pools anywhere, but the average person does not. Pools produce mud, which sweeping does not remove, and which, drying, becomes dust again. It is, in fact, almost impossible so to damp the floor by sprinkling as to prevent raising dust without also making mud. This crude method, then, should never be used in any shop.

The material now often used is wet sawdust, but this is not always judiciously applied. Many cover the whole floor with a sprinkling of it. Part of it becomes dry before it is reached, while the whole forms an unwieldly mass to sweep, and is a waste of material. The better plan is to deposit a considerable quantity, well saturated and partially squeezed out, at the point or points in the shop where sweeping is to begin. This mass should then be swept along like a regiment in line of battle, covering in its path every part of the floor. It will absorb the dust and carry it along, leaving the floor clean. If the shop, or the different portions so swept, are quite long it may be necessary to reinforce the moving mass once, or even twice on the way, but the addition should be made (like the original deposit) in a lump at one point, and not scattered or strewn over the whole floor. This method produces the cleanest floor and raises the least dust of all ways known to us.

A word about using the broom. It seems to be natural for a boy to push the broom in front of him, thus flirting the dust up into the air. We never saw a boy who had not been taught better who did not do this way. Now, if a broom is used for this purpose, it should be drawn and not pushed, the handle of the utensil being pointed ahead, and the broom part following. This makes cleaner sweeping, raises less dust, and does not destroy the broom. Of course, a bristle brush makes cleaner work than a bass broom. It is sometimes called a "hair broom."

It is needless to say that a rough floor can never be swept clean, and is expensive in its consumption of time, energy, and brooms. If a landlord will not provide a smooth floor, the tenant would best do it himself; it will be economical in the long run. Flooring boards should be of hard wood, and sawed "comb-grain" up. So cut, they cannot sliver and become rough or uneven.

Sweeping is one of the most important functions in the shop. It is done every day or oftener, and should be performed under the best conditions possible. Dust is destructive to goods, and losses thus entailed can and must be kept down.

Remember that a feather duster disperses, but does not remove, the dust from a shop.

Shop Windows. — In compiling observations on this subject, we are but giving prominence to remarks that have been made over and over again by well experienced tradesmen and others.

There can be no doubt that retail business is largely influenced by *Shop Windows.* These should be both well cleaned and well dressed. In the majority of cases too little use is made of them, although so much depends on appearances, and on the first impressions as it were, which prospective customers receive from the outside. A good window and a good light are very important, and so is the cleaning.

Window Cleaning. — Many a splendid plate glass window has been gradually spoilt by ignorant rubbing

and scratching with coarse and improper materials till past remedy. The work should not be left to the last new boy nor to any other inexperienced hand.

Strange as it may seem, there is a right and wrong way to wash windows; and as this operation is usually dreaded, the following method will doubtless be appreciated, as it saves time and labour. Choose a dull day, or at least a time when the sun is not shining on the window; for when the sun shines on the window it causes it to be dry streaked, no matter how much it is rubbed. Take a painter's brush and dust it inside and out, washing all the woodwork inside before touching the glass. The latter must be washed simply in warm water diluted with ammonia. Do not use soap. Use a small cloth with a pointed stick to get the dust out of the corners; wipe dry with a soft piece of cotton cloth. Do not use linen, as it makes the glass linty when dry. Polish with tissue paper or old newspaper. You will find this can be done in half the time taken where soap is used, and the result will be brighter windows.

Inside windows may be gone over with a clean sponge and rain water. Squeeze out the sponge in a pail, and, after rubbing with leather and duster, polish with silk rags or very soft cloth. Greasy windows need a few drops of ammonia in the water used in washing them.

A mixture for cleaning window glass is prepared by moistening calcined magnesia with benzine so that a mass is formed sufficiently moist to let a drop form when pressed. Make the mixture as wanted for use, or else keep it ready prepared in glass-stoppered bottles. For use, dip a pad of cotton wool or rag in the paste, and rub it on the glass to be cleaned, and afterwards polish with a clean duster and chamois leather. Another cleaning compound for the same purpose is to mix one part of olive oil, one part of liquid ammonia, two parts of lime, and one part of water to a thick paste.

In the case of any scratches being noticeable, they may perhaps be gradually worn away by the repeated use of a little ordinary rouge, and a good rubbing with soft cloths or cotton wool whenever the windows are cleaned.

Obscuring Windows. — Four ways: (1) Dab the glassy surface over with a piece of soft glaziers' putty; (2) A coating of stained rice jelly may be applied with a painter's brush (sash tool) and afterwards dabbed with a duster brush endways; (3) The best plan for lasting is to apply a coat of matting varnish, which is specially made for the purpose. It looks neat, and keeps out very little light; (4) Tissue paper, either white or coloured, may be fixed on the glass with white clear gum or thin pale varnish. Any desired pattern or temporary lettering may be marked out with a pencil, and when the whole is partly dry the lines may be cut through and the pattern stripped off with the flat point of a knife.

Crystallising Windows. — Dissolve a small quantity of Epsom salts in hot ale, or in a solution of gum arabic. Dab or rub it over the window, and let it dry on. For a fancy margin, ornament, or figures, wipe off the part you wish to remain clear with a piece of damp rag as soon as the surface is set. It may all be removed quite easily at any time with a wet cloth.

Frost on Shop Windows. — It is often very annoying to a shopkeeper to see his carefully-dressed window obscured inside by the frozen moisture, but this may usually be prevented by mixing 4 parts of cheap glycerine with 6 parts of methylated or other spirit, and rubbing a little of the mixture over the inside of the glass about once a fortnight during the winter season. In very severe weather the window may be sponged with alcohol. A very small quantity suffices. Another good plan is to insert close to the window bottom a gas pipe perforated with minute holes about an inch apart. When lighted they warm the air and keep the inside of the window dry and clear.

Steam inside Shop Windows. — May

generally be remedied by having an opening or other ventilation at the top and bottom of the window, so as to allow the confined heat to escape. The steam is due to the fact that the atmosphere of the shop is warmer and contains more moisture than is capable of being retained by the air at the outside temperature. The plate-glass is always at the outside temperature (approximately), so that it simply acts as a condenser. There are many ingenious methods for preventing the steaming, e.g., fixing a row of tiny gas-jets at the bottom of the window pane; but there is nothing so satisfactory generally as ventilation, or keeping up the circulation of the air, by means of the fanlight over the door and a row of holes above and below the window pane. An iron grating or a few slats of glass arranged in Venetian blind form answer the purpose very well.

Window Washing. — In washing windows a narrow-bladed wooden knife (sharply pointed) is useful for removing the dust that hardens in the corners of the sash or frame.

Dry whitening will polish the glass, which may first be washed with weak black tea mixed with a little alcohol. Spent tea leaves should be saved for this purpose.

A Good Cleaning Powder, which leaves no dirt in the joints, is prepared by moistening calcined magnesia with pure benzine, so that a mass is formed sufficiently moist to let a drop form when pressed. The mixture has to be pressed into glass bottles with ground stoppers, in order to retain the easily volatile benzine. A little of the mixture is placed on a wad of cotton and applied to the glass plate. It may also be used for cleaning mirrors.

A Good Paste.—Mix 1 part olive oil 1 part ammonia, 2 parts lime, and 1 part water. (See also *Window Polishing Pastes*, p. 1024.)

Wintry Windows.—The best way to clean windows during frost and snow is to use a pail full of water in which half an ounce of concentrated ammonia has been stirred, the window to be thoroughly washed in this solution, then, without drying, polish the entire surface with the contents of another pail full of water in which two ounces of muriatic acid has been stirred, finally polishing with clean, dry cloths. Window glass is, to a certain extent, soluble, and the streakedness so objectionable is caused by the liberation (by the first application of water) of alkali contained in the glass, and this being liberated, loosens the silica or flint, and thus produces the streaks. The use of alkali solution (soap and water) alone, often injures the glass; but it must be used where there is much dirt. If the window is cleaned often and there is not much dirt, it is enough to use the acid solution only, and no soapy water. It should be remembered that where the window glass is framed in metal considerable care should be taken not to allow the acid solution to penetrate beneath it.

Lettering Shop Windows. — The best and neatest are the white enamelled letters, and the best paste for fixing same on the glass is white lead made to suitable consistence with japanner's gold size.

How to Remove Old Letters fro a Shop Window.—(1) The best way to proceed is to place an ordinary hot iron on the letters for a few seconds (with a cloth between) and this will have the desired effect.

(2) Or, moisten the paste at the back of the letters with turpentine two or three times. This will soften it, and the letters may then be easily removed with a putty knife or any similar instrument. The marks on the glass should then be cleared off, and the window polished.

(3) A solution of 2 parts potash and 1 part soda applied hot. Do not let it touch paint.

Window Dressing. — This is a subject on which a lot of preaching has been done during the last few years. It has been called an art, and aptly defined as the art of creating a desire and inducing people to purchase something they did not need, and did not really intend to buy. As

a rule, every shop has a business window, some have several. If bright and well dressed, they help to attract customers and increase trade, while dingy, dirty, and untidy ones warn customers away, and injure trade. Everybody notices fresh and smart goods judiciously and artistically displayed; but nobody cares for stale, flecky, and dusty stuff spread about without order or arrangement. Even if observers do not purchase at once, a pleasant impression is agreeably remembered and acted upon at some other time. We are all influenced by effects. It is the same with newcomers into a town or district. They form their opinions from the look of the shop window. Nor does the show depend so much on quality and price as upon the skill of the window-dresser. Some persons have a natural talent for it, while others can only imitate, and there are many who are incapable of either. The main object is, of course, to attract the eye or the palate, and thereby to increase sales, profits, and reputation. A well-dressed and judiciously arranged window is bound to receive attention and admiration much in the same way as a beautiful and harmoniously arrayed lady does; people cannot help admiring.

A window-dresser should possess good natural taste, be a good designer, and methodical. It has often been said that goods well bought are half sold, and as much might certainly be said of goods well displayed.

The best height above the pathway for a shop window is about 16 inches, so that passers-by may easily see all the goods. It should be kept well-lighted, and the glass spotlessly clean and bright.

Mirrors are well worth all they now cost for shop windows. A long mirror at each side from the ceiling to the bottom of the window more than trebles the appearance, while one covering the whole of the ceiling of the window produces an excellent effect.

Do not try to put in the window samples of everything in the shop, such a display only bewilders and wearies the eyes of spectators; neither aim at quantity, but remember it is an exhibition you are arranging, not a store-house.

Anticipate demands, and keep well in front of the seasons; people will notice the articles, make a mental note, and them come to your shop to buy them.

A good plan is first to consider what is most seasonable and likely to be in request, not merely what you have got the most of.

Try also to get suggestions from others in the shop as to what each would do, and then use your own judgment. A window-dresser must also study economy, or he may easily spoil and waste twice as many goods as his show is worth.

Make a list of what you decide to show, and then picture in your mind the best way of arranging same, without loss or injury to the goods. Place small samples nearest the glass, and the larger ones in the background, so that all may be seen well. Spring cleanings call for soaps, soda, stove polishes, Brunswick black, furniture cream, brooms, and brushes. A telling display also in spring may be made with marmalade, oranges, and sugar. If the contents of one jar be inverted and placed under a glass cover, its nature and history is seen at a glance. In summer a light, cool, and airy dressing looks best, but in winter a "heavier" and more crowded window is preferable. Don't forget the children. A good advertisement is certain if you can set their tongues a-going, but beware of too much flimsy and childish decoration; people do not fancy eating stuff that has been toyed with. Do not put things which are merely of an amusing nature, and which neither relate to your trade, nor are intended for sale.

In a grocer's window tea may always be given a prominent position, especially if sealed up in handsome packets, or *dummies* may conveniently be used for the purpose. They should, of course, be perfectly fresh and clean.

Nothing is of more importance than

bright and spotless appearance. In fact, the window should be closely inspected from the outside two or three times a day, and every article exhibited examined, and made as inviting as possible. It is not prudent to make too copious a spread of loose tea, fruit, sugar, or other edibles which collect dust, flies, and moisture, for besides the loss resulting from deterioration, the sight often disgusts persons who are apt to reflect that they may afterwards become the consumers of the articles when removed from the window. What looks worse, for instance, in summer, than a window full of sugar, sprinkled over with flies—dead and alive! or in winter than a heap of damp and discoloured currants or raisins! Smart show cards, and neatly packeted and labelled goods, such as jams, marmalades, jellies, salmon, sardines, condensed milk, flasks of oil, etc., are much more suitable, although too much heat is apt to set up fermentation in tinned goods. In the "dog days" dummy jars of cream, a few fresh fruits, such as tomatoes, pine apples, grapes, melons, bananas, cherries, gooseberries, strawberries, etc., may be arranged on green leaves in trays, or in baskets, bowls, punnets, etc. Lime juice, fruit cordials, lemon squash, with aerated and other beverages, may also be displayed, either by sample bottles or show bill. We say samples of these, and so placed as to be easily changed; two or three bottles of each are quite enough in hot weather, because customers will be better served from stock passed through an ice-chest, such ice-chest being stood near to the butter, bacon, lard, and cheese, which are best kept cool. Two or three pots of green plants and fresh flowers placed alongside of provisions add a pleasant and cooling appearance to the window in summer-time.

Loose eatables should always be scrupulously covered with well-polished glass shades, or invitingly displayed in small sample bowls, appropriately ticketed. The colours also should harmonise. Such a window will look well, and gain from criticism. Show-cards or tickets in the window should always be bright and neat, and if prices are affixed they should be reasonable, neither too high nor too low. Timid buyers pass many a shop rather than step in to ask the price, simple as it seems. The best customers like moderation, but articles that are specially cheap and plentiful should always be shown, and if the trade be ready-money, and the prices be attached, the goods should largely sell themselves. But too many tickets must be avoided. You don't want the cheap bazaar style. Care should also be taken that packed goods like cocoa, candles, etc., liable to melt from the heat of gas or sun, be not exposed to these influences. Glasses of lozenges and other confectionery are often irretrievably injured and spoilt through disregard of the nature of their contents.

Customers like to see fresh things every visit. Window placards and counter goods should be frequently changed, and the goods never allowed to remain till they become discoloured, stale, and dirty, or, instead of attracting custom, they will repel it. No favourite cats should be allowed to bask in the window, no matter how sleek and handsome they may be. This is a common but very great mistake. Nobody wants food that these animals have clawed over, or sat upon.

Avoid piling up at the shop door sacks of flour, rice, sugar, boxes of fruit, etc., to serve the convenience of passing dogs. Perhaps the dog nuisance is best prevented by placing a small trough of water against each door-post.

A Christmas window—artistic and catchy—is easily and cheaply arranged by embedding a few large fruits, spices, bon bons, and other seasonable specialities in cotton wool representing a cover of snow. Long threads with small tufts of cotton knotted a few inches apart, hanging from the top of the window to the bottom, make a capital imitation of falling snow. Remember, also, that Christmas is the

children's special fete, and you should show them something to talk about. Cleanliness goes a long way in groceries, also in confectionery, fruits, and, in fact, in all things people want to eat or drink. Retailers should ever bear in mind that the thing which is next to godliness is a mighty important thing. A tastefully-arranged display of goods in a shop window is one of the best and cheapest advertisements. It is the shop index, and by it customers are attracted or repelled.

A good money-bringing window is often made by putting only one class of goods in at a time—say, tinned salmon, lobster, sardines, or other meats, peaches, apples, tomatoes, peas and all things in tins. An occasional show of glass goods may be made very effective—bottled fruits, jams, marmalades, jellies, pickles, sauces, curries, capers, etc., etc. Much also depends on how articles are put in, and not mixed up anyhow. The provision window should be dressed every morning, and fresh cuts shown.

The goods inside of the shop on the counter, etc., should be as well displayed as those in the window.

The clever window dresser will use as many nice-looking dummies as possible, and not bury stock in his window bottom.

Shop Management — *Observations and Suggestions.*—There is no natural law which declares that a man should fail in business; but there is a natural law which, if a man disobeys, he shall fail. How, then, is this to be averted, and success attained?

There is a natural law which declares: (1) That a man starting into business should have knowledge of the same; (2) that he should choose the right field—an unoccupied or neglected one; (3) that he should have reasonable capital; (4) that he should devote proper time and attention to his business; (5) that he should be progressive—keep up with the times and not allow the times to outstrip him.

Men, in failing, often blame their luck. There is no luck in business. Success and failure are the effect of certain causes. Wherever there is an effect there is a cause. Luck has neither cause nor existence. It is a myth, or ignorant superstition, frequently symbolised by the hanging up of old horse-shoes behind a shop door or other parts of the premises, and the man who uses the word or its symbol in their modern acceptation only proclaims his heathenism.

A good many persons start up in grocery with more hope in their hearts than either cash in their pockets or knowledge of business in their heads. The result is they don't know enough about it, so that, lacking the equipment and qualifications to win success, they naturally fail. It's a common mistake to think that anyone can be a grocer. Other easy souls, with money enough, imagine they have only to stock a shop, open the door, and go behind the counter, and sit down to mind it, and all will be well; customers will come in crowds! They gradually find out that even capital, without tact and energy to turn it over, is helpless, and is soon lost. Then there are dishonest ones, who either begin with the sole idea of running into debt deeply as possible, selling at any price and cheating everybody, or who purpose dealing in cheap, showy, and inferior goods, to be worked off by puffery and lies, short weight, etc. There is, however, probably as good a chance to-day as ever for the industrious man with a business head, who knows his trade, understands modern requirements, has reasonable capital and determination, and goes honestly to work. One man, even with capital, will do better to continue as assistant, while another, with very little, will do better to begin on his own account. Before commencing, a man should seriously consider what class of trade he and his qualifications are best suited for. The question is a momentous one, and it is foolish to evade it by thinking he will decide as he goes along. It is not of

much consequence what sort of a business he would like to have, as what he is really fitted to carry on properly, and he cannot be too sure about this. Further, not only must he be posted as to the details of his own business, but he must also keep abreast of the times, be up-to-date in every respect, have a thorough knowledge of the latest and best methods of conducting business, and also post himself as to the methods adopted by his competitors.

When he has decided as to the class of trade he can best cater for, he should seek out the most suitable neighbourhood. Big thoroughfares are sometimes deceptive, owing to sparseness of able residents. To purchase a ready-made business is risky. Past turnover may be useless as a criterion of the future, so many old shops are played out, the best residents gone, and poorest left behind. Mechanics, and others who receive constant wages and can pay their rents, move into new houses and choose clean, healthy homes. As a rule, therefore, the new neighbourhoods are the most hopeful, and it is desirable to look well about them before deciding. Notice the number and position of the people actually residing therein, and calculate the status of the passers-by; for, however numerous the latter may be, they may have empty pockets, and a dense population is not much use to a shop-keeper unless the people have regular money to spend. Where stuff has to be dealt out in halfpenny and pennyworths, and where farthings are rife, there are long wearisome hours and very small results. We would certainly recommend the young man of limited means to commence in a new and rising neighbourhood—not, of course, before houses are built, but where cleanliness and healthiness prevail; also where the people live all the year round, and if without depending on one or two large factories which may close or change at any time, so much the safer. Don't be in too great a hurry in engaging a shop. Make no promises to buy anything, sign no agreement, and part with no cash until you have made every possible inquiry from neighbours and other disinterested persons, and thoroughly grasped the situation. When a seller professes to have numerous other offers, suspect him of trying to dupe you. In fixing upon a shop, or purchasing a business, take nothing for granted, verify every statement made to you. If you are unequal to do it thoroughly yourself, get some reliable person of experience to do it for you, or with you. The neighbourhood, especially, should be examined as critically as the books. Don't set up business in damp premises, or your health will suffer, and many of your goods will soon have a nasty, frowsy, mildewy smell and taste; also beware of humid cellars, which produce similar results. Remember the man who lost his health in securing wealth, and then lost his wealth in vainly trying to get healthy; he lost both, and died a miserable pauper! The climate condition of the shop is very important. The thermal, the hydroscopic, and the barometric conditions, although seeming to vary indefinitely, have nevertheless fixed natural limits of variation with altitude, latitude, and longitude—height from floor to ceiling, length from front to back, and breadth. Does the front door face the East winds, and how does the hot sun play on the windows? Be clear and explicit in all bargains. Every verbal understanding should be confirmed in writing. If stock, fixtures, and debts or running accounts, are taken over, there should be a proper detailed list of each, and these lists should be critically examined at leisure before the bargain is struck. A substantial percentage allowance is usual for the stock and fixtures, and a proper *deed of assignment* is necessary for the debts or running accounts; for if you have to sue any debtor, the first inquiry in Court will be for that important document. Much good money is often wasted in fitting-up, alterations, and so-called improvements. The

timid beginner of limited means probably employs a cheap carpenter or builder, who knows little or nothing of practical requirements and up-to-date contrivances, and they carry out each other's notions until the result is a staggering bill for materials, time, and lumbering constructions of no real value, but often impediments, finally to be removed as useless lumber, only fit for firewood. By far the safest plan is to call in an experienced specialist, who has fitted up and arranged hundreds of similar businesses before. No better firm can be named than that of Parnall's, Narrow Wine St., Bristol.) He will see at a glance what is necessary, and, no matter how modest the sum named to him as a limit, he will soon suggest the best arrangements, the most economical contrivances, and the fixtures, fittings, or utensils most needful. He will also provide such as shall be of good, saleable value, if ever needed for removal. Mirrors, plate glass, marble slabs, and modern fittings, are always attractive, and will any day realise their approximate cost. Fine shops attract trade, and a liberal display of mirrors and mahogany, although costly, seem to dispense with the necessity of holding large stocks. An increasing number of people who can afford it, take pride in attractive homes, and the same feeling draws them to bright, clean shops for their food supplies. Dark, dirty, crowded, disorderly shops, on the other hand, betray dirty owners or assistants, and drive patronage away. A little money may generally be well laid out in glass show cases, where fancy and expensive articles or dummies may be well displayed, and at the same time kept from dust and unnecessary handling. An ice-box, or refrigerator, will be found invaluable in summer for cooling the butter, aerated beverages, tin goods, etc., likely to be called for each day, so will a few ornamental glass jars, with air-tight stoppers and labelled in black and gold, for keeping small supplies of the more expensive spices clean and fresh for a long time. If the shop has an old and valuable reputation, don't alter its appearance. If it has been mismanaged, have the outside thoroughly renovated, so as to notify a change of tenants. Always have a well-written facia-board, not a gaudy one, but one that will give some dignity to your shop, and suggest that you do a high-class business—gilt lettering on a dark ground will last longest and look best. A dark shop may often be improved by painting and varnishing the ceiling white or cream colour. This reflects the light, and can always be kept sweet and clean. (See also *Water Paints*, p. 1009.)

Buying Stock.—Make out a clear list of the staple goods you think the neighbourhood needs. He that anticipates and hits the wants of a community best will have a good share of success. Submit copy of your list to two or three good wholesale houses for their cash prices. Wherever you buy get a guarantee of purity written on the invoice and signed. Be careful not to buy too largely of some articles and none of others; and if wholesalers are near get only about ten days' supply of the commoner goods, such as sugar, butter, bacon, and cheese, and other things which dry up every day. Remember you can have any thing at an hour's notice, and that a small but frequent influx of new goods always attracts and interests your customers. Instead of buying each kind of tea separately and trying to mix them yourself, it is better to buy tea ready blended (see page 119). It is very difficult to get grades to follow each other if a man does his own blending. Be sure you get to the best house for your fresh roasted coffee berries, and see that you have a good mill for grinding them fine. The stock of an ordinary retail grocer never need exceed a month's sales. Ask the wholesalers, or manufacturers, for free show cards, handbills, addresses labels, envelopes, etc., customary in the trade. Avoid cheap lines, unless your neighbourhood be a low one, with customers not very particular, and

changing every week or month. Cheap lines are generally faulty and unsuited for steady business. Suppose you buy a cheap lot of tinned salmon or sardines, which you can ticket at about half usual price. The stuff may not be actually bad, and may pass the authorities, but the customers will never again have much confidence in your brands, and, what's more, they will suspect all your other goods. Cheap lines in bacon, cheese, butter, oatmeal, jam, or anything "just off" should therefore be avoided.

When an article is offered at less "than cost," it may be rejected without further consideration. Modern philanthropy has not reached that delectable stage at which human beings voluntarily give something for nothing. The purchaser may depend upon it that if he can detect no wrong at first he will be wiser later on, when the article is put into use.

It is very important to keep a *Receiving Book*, wherein to make rough notes showing date and description of all goods received, weights, etc. Count, measure, weigh, or gauge everything you buy. Every article must be carefully examined on arrival. Be sure the biscuits, oatmeal, butter, and sweets are fresh, and reject any which are old, stale, rancid, or dirty-looking. In rejecting goods, it must be remembered that the whole of the commodity must be returned. You cannot pick out the best and return the rest, except with the written consent of the senders. Goods arriving piecemeal, in a form difficult to count, may also be suspected, i.e., sugar, rice, fruit, etc., weighed up and packed in casks, should be carefully sorted and weighed. Printed papers, handbills, billheads, labels, cards, etc., in loose uncountable bundles, are often deficient; but they may be checked by counting how many go to the pound, and then weighing and calculating the whole.

Unpacking Goods. — Great waste commonly occurs by the careless breaking-open of boxes, casks, etc., with improper tools. Unpacking should be carefully done, and the lids properly refitted, tied together, or placed inside the empty package. This system will save much after trouble, and the empties not returnable may be used as dummies, or, considerably better, sold. The assistant who smashes into a package anyhow to get at the contents, and throws the pieces right and left, often wastes more than he earns. Most of the paper, string, and cord received with goods may be used again for one purpose or another if carefully unloosened and hung up in their proper place. Try and use good wrapping paper, good stationery, billheads, address labels, string, etc., or you will lose far more than you will save. See that all charged boxes, bags, and other packages are returned quickly, and at original sender's expense if the goods were bought "carriage paid." A great fuss is commonly made about the opening day. A great volume of business is thought to be a sign of success, and a big crowd is regarded as indispensable, but the bulk of that crowd is often scarcely worth having. They will be at some other opening first opportunity. The result is that people are crushed, kept waiting, or served in an abrupt, hurried, and possibly offensive manner. Respectable purchasers, neighbours, and other desirable customers resent such off-handed treatment, and are disinclined to enter the shop again. Such a shop may thus get known too soon! There is much wisdom in the saying that "the longest way round is the shortest way there," and the man who thinks to cut corners has often to retrace his false steps! The real business has to begin after the first few days are over, and it is probable that certain "cheap opening lines" have also disgusted many people who "tried the shop" by testing them. A reputation may be *lost* in a day, but not *gain'd*! Better open quietly with a few staple articles of the right quality, good service, and a determination to hear what people want, so as to satisfy all reasonable customers. It is more

natural for things to grow up gradually than to come into existence full blown, like mushrooms, in a single day. Bill your district thoroughly but *gradually* not all in one day or week, but perseveringly and repeatedly.

The wording of these handbills should be suited to the class you appeal to. As a rule it is best to cultivate the best customers — give prominence to quality rather than to cheapness. Low prices speak loud enough for themselves, but printed prices are objectionable where the trade is partly cash and partly credit, or where business depends on high quality, because no one can sell high quality at low prices; nor can anyone sell 10s. worth of goods on 6 months' credit so cheaply as for ready money. A working-class population may be shown that "a little money will go a long way" at your shop, and it may be well to figure out for them occasionally what a shilling or half-crown will do. Stock may be cautiously extended as customers increase. Give your customers just what they ask for without any talk, rather than risk offending them by pressing them to take something in its place. For, suppose a person asks for some well-known brand, and you try to sell one bearing your own name, it arouses suspicion at once. Even if you succeed, follow the article to its destination and hear the remarks passed upon it and you! When the wind, water, and gas is eliminated the customer is almost sure to fancy the stuff looks worse than the money. Avoid substituting articles when executing orders; people at least think they know what they want, although they may not be the best judges of what is best for them. If you cannot supply what is ordered, it is better to say so clearly, or at least send a polite note with the substitute, offering it on approval, and expressing a readiness to take it back if not found satisfactory. But beware of doing this too often. Avoid dealing in imitations—imitators generally copy the *appearance* without reproducing the qualities which commend the original. Indeed, to tender an imitation to the well-informed is an affront, usually resented by a transfer of patronage to where genuine goods only are sold. Consumers naturally have their predilections, and must have what they call for; and if you do not let them have it cheerfully they soon know, and will get it elsewhere —probably without consulting you further.

"No sugar without tea," "no barm without flour," and such-like deceits are common but egregious errors, and the trader who adopts them simply gives himself away by exposing unbusiness-like trickery which annoys and antagonises customers, and which none will appreciate. If people want a thing, and are ready to pay for it, why refuse to supply them unless they buy something else they are not needing? What would you think of a hosier who, when you ask for a necktie, churlishly tells you to "buy your ties where you buy your shirts"? Would you go there again, and would you not relate the insult to many of your acquaintances? Goodwill and custom are not retained by such cunning methods.

Almost as unwise is the hesitation, refusal, or neglect to send home some trifling or unprofitable article suddenly required by a customer. The most inconsiderate customers are often the best, and perhaps if they considered much they would be worse customers, for they might discover they could buy some things better elsewhere! Is it the customer's fault that sugar or any other article is sold at a loss? Why show and ticket things at a price if you don't want to sell them? And, do you not try to buy the best articles at the lowest prices offered? People will forget and forgive a trifle extra in price, but they hate fooling when they go to buy. Let your rivals dodge, while you get fair prices and strive to please! You will gain the most respect and the best customers, and will be better without the other sort. Some people are afraid of cheap stuff, and they have a right to be, for there

is generally something wrong. The public naturally like to know what they are eating and drinking, and they sometimes look to the grocer for information. The better a man knows his business, the more confidence he inspires, and the more likely he is to succeed. Custom is also gained by civility, and is more easily lost by the reverse. You should, therefore, take care to know all about every article you stock. Try them yourself before stocking them; learn about their character, how they are made, where they are made, and what are their constituent elements. This does not mean that a man is obliged to answer every thoughtless question. The public are sometimes capricious, exacting, and unreasonable. "Are your butter and eggs fresh to-day?" may generally be best answered by a smile and an energetic readiness to show the articles, name their best qualities, and quote their prices. To say "No," might possibly lose an order, although the condition of the goods were perfect.

First-class shops sell first-class goods. But there are retailers inclined to relegate leading brands of the highest quality to the rear, or keep them out of sight, because they have substitutes which leave a larger percentage of profit. The idea is plausible and has been tried over and over again, but it never works out well, and those who go deepest into it may have *big percentages*, but soon be left with *few customers*. The influence of "name" may be easily tested by taking any popular article, say Lea and Perrins' sauce, change it into other bottles bearing your own name and labels, and see how little you will sell, even at 4½d. per bottle! High-class names give a character to a shop, and an absence of the best known proprietary articles is attributed by the public to causes which reflect more on the retailer than on anyone else.

Avoid Haughtiness.—Some retailers go about with their noses so terribly high that they might almost be used as hat pegs. They appear to think themselves public benefactors, and overlook the fact that the public could do much better without them than they without the public. Don't drive away customers by behaving as though they were obliged to come to you, but ever show them that you respect even their smallest orders, and you will probably win all their business. A rightly disposed man will be respectful and considerate to the poorest and smallest of his customers! These are often very jealous of their privileges as buyers for ready money, and possibly exaggerate its importance because they have so few privileges. If, however, you take their pence politely and kindly, they will bring you their shillings when they can. It is nevertheless unwise to try to cater for the rich and the poor in the same shop; they never mingle well, but drive each other away, and many a failure has been due to this attempt. If you are very busy, with customers waiting, and any one betrays impatience, or is about to leave without being served, speak to him politely, telling him you will wait on him in a moment. Such a customer will then be satisfied and probably remain. Be careful to attend nicely to children, and see that you serve them in their turn, remembering that all you say and do goes straight back to mothers and those at home. The good word of the children is valuable. If you treat them kindly they will find many a way to recommend you to their parents and others who love them and will listen to them. Don't take advantage by serving them with old, shop-worn, and spoilt articles, and then congratulate yourself on your cleverness in having secured the money as you watch them toddle away. There's no surer way of making enemies of people than trying to cheat them! Treat customers well if you want them to trust to you and buy freely. You may palm off a very profitable (?) but inferior article on an easygoing customer once, but where will that customer buy next

time? Decision and readiness in righting wrongs is also very important. If a retailer hesitates, argues, or quibbles when an error is made, either on his part or that of customers, it always leaves a sting. However true it may be, nobody likes reminding of his or her unreasonableness. A careless customer often makes a mistake in buying a thing, rues about it afterwards, and may try to return or exchange it for something else. Even then, instead of standing upon your rights, it is wiser to take it back and return the money cheerfully, or exchange the article, and thereby help the customer instantly, even when clearly the latter's own fault. The temporary loss to you will probably be trifling, and if you can smile over it pleasantly and act generously, there are very few if any customers who will not appreciate it afterwards, and soon make amends in some way. Narrow-minded, short-sighted, and over-particular tradesmen often lose pounds in exacting pence. It is business-wise to keep your deeper feelings to yourself sometimes and let your smart competitors try to set the world right. An energetic spirit is valuable, but an uncontrollable temper is a certain mark of weakness. The long-headed man who can govern his temper is the strongest. Nearly half the mistakes of life arise from excessive zeal or ill-tempered haste in standing up for one's "rights."

Be invariably courteous and considerate to your customers, as ladies particularly like to bestow their patronage where they have some respect and esteem for those who serve them. Don't send customers from one counter to another, or upstairs or down, but go or send someone with them to show the way. Many persons seem to mistake pertness for politeness. Nothing makes such a lasting impression on customers and relaxes the purse-strings quicker than coming into contact with a genial disposition.

Grotesque instances often occur to tantalise and exasperate some tempers. We knew a most obliging grocer—always ready with a bright smile, always eager to confer favours on his customers. In came a little, lisping girl one day, carrying a large empty beef tin. The grocer smiled as ever:

"And what's for you, dear?" he asked.

"Pleathe, thir, a pound of tweacle, pleathe."

"Certainly, dear." Then he weighed the tin. It was a work of difficulty, for it was cumbrous of shape and awkward to weigh. The grocer's temper was tried, but he smiled and succeeded.

"Now," he said, "there's a good pound and overweight, dear. Where's the threepence?"—"Pleathe, thir, it's in the tin!"

Overstocking and Embarrassment usually go hand in hand. One follows the other, and thousands of otherwise solvent men are losing their commercial reputation for want of cash, while piles of unnecessary stock on their shelves are staring them in the face. Shops may be seen every day overstocked with faded fancy articles seldom wanted, while sadly deficient in the ordinary necessaries in continual request. Besides, most things deteriorate by long keeping, and have frequently to be cleared out at less than cost, or they are let go on credit to untrustworthy persons. Over-buying is the common pitfall of new beginners. What is the use of locking up your capital or your credit in more goods than you require, even if you get them at half-price? True, you will "make a show," but you will probably have to sell them cheap, or keep them too long, perhaps both. And you will also spoil your customers; they will always be wanting them as cheap or cheaper, whether you can replace them or not. Buy often, and in small quantities, and pay quickly. Leave market speculations to others who know, or think they know, more about them.

If you ever have any tinned or bottled goods with dirty labels, tell the makers how many, and ask for a

few new labels, then wash off the old ones, polish or clean the goods, and re-label them. Never forget that you are acting as buyer for your customers. Try and get them good useful stuff, cheap as possible, but always good, and they will stick to you. Don't get rubbish for them, or you will lose their confidence and respect. If you get hold of a bad or unsaleable lot, dispose of them wholesale or privately, even at a loss; don't work them off on to your customers, either regular or casual, but realise, and release your cash for a more profitable use.

One very common way to dispose of odds and ends is simply placing them on the counter and making it a system of calling the attention of likely purchasers to the fact that there is a reduction in prices. Never, however, sell less than cost, and never let anything get so stale that it is not fit for use.

You get the customers' confidence, and they are always ready to accept or take advantage of the reduction, knowing that they had at no time received anything misrepresented.

Don't store goods without judgment; remember that tea and onions side by side on the table, may be all right, but all wrong when side by side in the shop or warehouse. In many establishments a great amount is lost in the course of a year by breakage, the soiling of articles by reckless handling, the spilling of offensive stuff into food products, the leaking and breaking of packages. Much of this loss can be overcome by proper management by the person in charge.

Endeavour to keep your stock seasonable, fresh, clean, and in the pink of condition; also the floor, shelves, counters, and trade utensils. It is undeniable that half of the provision shops and back premises are simply repugnant to behold from the customers' side of the counter, and they are generally worse on the other side, under the counters, in the corners and recesses of the drawers, cellars, staircases and show rooms. The floors are so thick with grease and filth as to be quite slippery. The window bottoms are often speckly or black with the mortal remains of deceased, but not departed, flies—a sort of necropolis of poisoned insects, and the samples of sugar, fruit, or other edibles are half dirt. These slovenly shopkeepers will never reform, but they offer every encouragement for a clean, tidy, business individual to start up in opposition. Eatables ought always to be kept scrupulously clean, and daintily handled by cleanly washed and neatly apparelled men in aprons. Always have clean hands and finger nails. Don't attempt to touch butter, tea, coffee, or anything, in fact, with hands soiled with oil or grease of any kind or tobacco. Never use the hands to touch anything that can be handled with a scoop. If too much has been put in a bag, empty it out or take it out with a scoop, but don't put your hands into it. Don't use the same knife or scales for tobacco, soap, cheese, bacon, tea, sugar, coffee, and rice.

How often may be seen sacks of flour, rice, peas, sugar, boxes of cheese, bacon, and other packages of food, piled around a shop door, offered day after day as a urinal for the convenience of passing dogs of all sizes? The tradesman who shows such heedlessness need not expect his neighbours to fancy his goods. On the contrary, his shop will be studiously avoided by a large number, and, instead of being recommended, will be denounced.

Smartness at the Scales, Counter, etc. — Many shopkeepers and assistants have an idea that an over-reaching kind of shrewdness is a praiseworthy business quality, and that success largely depends upon this kind of sharpness and chicanery in dealing with customers. This is a mistaken idea. Honesty wins in the long run, although it often appears to be hopelessly in the rear. Exaggeration, not to say lying, may lead a buyer to believe an article is good and cheap, but after it is bought the lie is discovered, and that buyer never forgets

being cheated. It should be the first effort to gain the confidence and respect of customers, not their ill-will and contempt by getting the best of them in a bargain. A customer who once finds himself swindled in buying goods will always be suspicious afterwards of the shops that swindled him. The tradesman who thinks himself sharp may make a little money by the transaction, but, in the long run, he loses a customer who might have traded with him for years if he had induced him, by fair and square dealings, to continue his patronage. Don't allow your employees to act as they please in such matters, for the onus and loss will fall on you. It was ordained long ago that enduring prosperity cannot be founded on cunning and dishonesty, and that the tricky and deceitful man is sure to fall a victim, sooner or later, to the influences which are for ever working against him. The man who would persuade you that it is impossible for an honest shop-keeper to get a living betrays a sad lack of moral courage, and is not himself to be trusted. His house is built upon the sand, and its foundations will be certain to give way. People cannot give these truths too much weight. The future of the young man may be regarded as safe who eschews every shape of double-dealing, and lays the foundation of his career in the enduring principles of everlasting truth and industry. Be thorough in all you undertake; there's nothing like thorough-going and sincere earnestness for securing success.

Careless weighing out is a flagrant source of failure, and must be seen to. Small articles should not be weighed on heavy scales. A man must not only weigh correctly himself, but see that others in his employ do the same. Assistants have frequently been heard of who try to cultivate their own popularity with customers by systematically giving them liberal overweight! Where no sharp check is kept on stock, this may soon produce disastrous results.

Assistants. — The success of a retailer depends largely upon his assistants. When a business falls into the hands of those not quite able to direct it properly, it is of vital importance to have a capable and trustworthy assistant of superior qualifications and experience, who will help to buy, contrive, manage, and give his mind to making the business prosper. Without this devotion, the best concerns frequently go to wreck. Outside advertising efforts and good values are often spoilt by inside defects. A good shopman will always increase business, add to profits, and be of the same service as a partner. Indeed, he often has more to do with the customers and success of the shop than the proprietor himself. If you advertise for assistants, you may expect the bulk of the applicants to be doubtful or faulty. The worst are generally out of place. At interview each likely applicant should be handed a sheet of paper whereon to write his name, address, age, references, and salary expected. You may then take the paper and add his answers as to previous history, length and nature of each engagement, reasons for leaving, etc. It will also be well to note thereon your own observations, so that, after seeing a number of applicants you may the better be able to recollect those most likely to suit. Of course, it will be necessary afterwards to verify the correctness of the particulars given by the person you engage, and it will be well to date and retain this document as long as he remains in your employ. Let "fancy" men severely alone, and avoid all "loud" fellows. Honesty is of the utmost importance. Costly habit is not needed, and showy dress is positively prejudicial. Clean hands, face, neck, and general neatness, cost very little, but are very desirable, and are good criterions. Black-rimmed fingers, slovenliness and evil odours of tobacco or intoxicants are *not* prepossessing. Good and expeditious writing, correct spelling, and punctuation, with expertness at reckoning, should also be looked for.

Select those who know their duties, preferring those who have already been doing similar work, who are likely to be respectful, patient, and courteous to customers, and show an earnestness to help forward the business; not to "put in time," and work little as possible when "the boss" is out. There are employers who make it a rule to test the tempers of assistants before engaging them, and will keep the applicants waiting about for half-an-hour or longer before attending to them. This tries their temper no little. Those of hasty, undesirable temperament soon turn away in a huff, other careless ones follow suit, but, as a rule, the most desirable, who really want the place will wait. Two or three provoking requests to call again, apparently given inconsiderately, are severe tests of patience, courtesy, punctuality, and general behaviour, and *ceteris paribus*, those who retain their temper, and bear these trials best, gain the post. To prevent assistants starting in opposition, or engaging with competitors, and mischievously interfering with customers, most firms now require all hands to sign an agreement something like the following:—

"I, hereby agree with my employer of that in consideration of his giving me an increase of salary, which I acknowledge receipt of, I agree not to engage myself, nor assist either directly or indirectly, in the trades of grocer, provision merchant, or chandler, either on my own account, or in the employ of any other within a radius of twelve miles from the post office at , for the space of two years dating from the time I leave the said employ. If I break this agreement I hereby agree to pay the said the sum of fifty pounds." Signed . Witness . (This agreement requires a 6d. stamp.)

An incompetent, apathetic, repulsive or impudent counterman, a careless or lazy bookkeeper, always behind hand, a slovenly, wasteful porter, or a reckless and uncivil vanman, always redolent of tobacco, may spoil any business by driving away trade as fast as you can attract it. Customers get their impressions of the house by the treatment they receive from its assistants. Coarse jesting is to be avoided, and especially in the presence of respectable customers. Impudent assistants often insult respectable females by their loose familiarity.

Don't have too many Hands.—Easy-going employers often lose largely by retaining men they do not really need. Treat your assistants kindly but firmly, and show by your earnestness that a straight and firm adherence to business rules and practices is essential to all parties. Same time, don't expect assistants, porters, and lads to be as clever, thoughtful, and careful as yourself. If they were, perhaps they would want bigger pay, or perhaps they would soon be masters and yourself a servant, so be a bit considerate, merciful, and thankful. Every hand, down to the message boy, is entitled to polite treatment from the principal. If he does not deserve this much, or abuses his position, then he should not be employed at all. It is not wise to rebuke an employee sharply in front of customers. Whatever the offence, the reprimand should be given privately. Frequently the customer would feel it as keenly as the employee who called it forth. Do not let boys serve customers, but they may help others to do so. Good temper must prevail, no matter how provoked. Nothing looks worse in a shop than an irate man or woman shouting ill-humouredly at a boy or other assistant—or, indeed, at any one. The customer knows nothing of the provocation, but sees the ill-humour, and is likely to resent it. Both rich and poor like to deal at the shop where a respectful tone and kind treatment prevail.

Some retailers aim at getting cus-

tom by pulling long faces and exciting the sympathy of their neighbours, and a diplomatic grumbling is often resorted to merely for the purpose of diverting competition, and keeping down wages of employees. Then there are other gruff and sordid traders always growling that they do not get on better. Their ideas are that everything depends on the prices they sell at, that their bullying, insolent, and surly manners lend dignity to them, and that a rough and blunt way of speaking is business-like, and indispensable to success. The wonder is that such men ever do succeed. If they could but imagine themselves in the position of their customers, retailers would often be ashamed of defects they had not noticed before.

Quick Turnover.—One of the main points in success is rapid turnover; delays mean loss. Even if capital be unlimited, the bulk of the grocer's stock should be turned over every month, and the proper time to remember this is when ordering goods. Fresh arrivals always have a charm for customers, but no one likes old weather-beaten stock. A good plan is to have a speciality or brand of your own. Many make a feature of tea, but ground coffee offers quite as good, if not a better object for special prominence. A fancy name can easily be made and registered, and if two or three qualities are adhered to, there are few better-paying lines (see also *Packet Teas*).

Live and Let Live.—Instead of trying to save a trifle by purchasing your own domestic requirements from strangers at a distance, always patronise the other tradesmen in your neighbourhood, and so inaugurate or stimulate mutual business, besides winning their goodwill and esteem. Attention to the social side of things also fosters good feeling all round; it oils the wheels of business. Cutting should never be resorted to. A man that can only get trade by cutting is a pitiable object, and receives neither thanks nor respect. Even those who trade with him despise him personally, and, of course, he betrays himself to his fellow traders as either untruthful, dishonest, or short of common sense. Don't vie with a cutter; waiting for a rival to fail, so as to gain his trade, has never been known to make a man rich. The new beginner should never commence by cutting. Everybody will respect him for working hard, living economically, keeping his expenses down, giving good value and able service, but his *prices must be up to par!* To advertise, issue handbills, and make a good display is quite legitimate, and to improve business it may be well to choose one or two of the slackest days in the week to canvass new and desirable customers, especially if you have a wife, daughter, sister, or other reliable person to stay in the shop during your absence—not necessarily to serve customers, but to welcome them and preserve order. Instead of cutting, adhere to the prices already prevailing in your trade and district, and copy respectable methods. A judicious liberality in the matter of samples when dealing with respectable people is seldom misplaced. With above exception as to soliciting, a retailer's best place is in his own shop every business hour. The new beginner who leaves his goods and his customers in the hands of cheap men or boys, while he dresses up and goes to town buying or gadding about, attending meetings and other diversions, or even sits clerking in a glass case at the rear of his shop, too exalted or idle to wait on his customers personally, misses considerable business, and courts failure. People always did and always will prefer shopping where the principal is known to be in regular attendance. They think that they get better consideration, or more respectful attention, than from careless paid men and lads, and, of course, they are

right. Besides, a man cannot go about town very well without spending money or being drawn into bad bargains, to say nothing of the unnecessary wages, the waste, and pilferings going on in his absence.

It is a common mistake for a young man, soon as he sees his name on a signboard, and on his printed papers, to act as though he imagined his fortune were already made.

There are indications that in the immediate future retailers will have to encounter competition far more acute than anything they have yet had to grapple with, and those who aim at supremacy will act wisely in preparing to meet it by personal assiduity and management.

Cash Trade v. *Credit.* — The preponderance of opinion among experienced retailers seems to be that ready-money business is the best, although this may not be so in all cases. Much depends on the trader's environment and class of customers. No one will dispute that a rigid cash trade with the masses is the best, and only safe, one, and that the giving of credit is responsible for most of the "strikes" which are now constantly convulsing the country. The number of small shopkeepers who lose their little capital, their peace of mind, and their respectability, by letting goods go out "on trust," is appalling. It is the most prolific of all causes of failure. Nothing is commoner than the small general shop, often with only a few shillings' worth of stale and wretched stock in sight, but with its old greasy, dusty "shop-book" full of debts, ranging from one penny to perhaps £5, £10, or even £20—all for goods sold and delivered, and doubtless at good profits, but, alas, never to be paid for! The result is the shopkeeper has neither goods nor money remaining. The book of debts is really worthless, for no collector could exist on the trifles he could screw out of the irresponsible debtors. As a rule these trusting shopkeepers lead wearisome lives, and lose their all; and frequently the inexperienced wholesaler who supplies such shops is dragged down as well. Certainly one of the easiest ways of going to ruin is to open a little shop and let goods out on credit; and almost as fatal is it for the trader who begins to give credit to the little shopkeepers. Fortunate indeed is the small shopkeeper who pulls up in time, stops all "trust," and only buys the commodities for cash which can be sold for ready money; also wiser is the semi-wholesaler when he realises that "the small shop trade is not worth having"—on credit. A man of limited capital had much better remain an assistant than begin on his own account by taking or giving credit. Many retailers are virtually slaves in the hands of their wholesaler. They have no independence, and dare not buy goods of any one else but the firm to whom they owe money, so they really have to take what they can get, and this also means higher prices, for the wholesaler cannot be expected to lay out his money, stock shops, and run risks for nothing. Wait, and save all the money you get, until you can buy what and where you like at lowest price, and pay cash. Put up a card or bill in the shop "*Cash prices only. No credit given.*" It will save you a lot of unpleasantness, and if any one is bold enough to ask you to trust them, you can point to the rule! If it be a matter of a penny or two "till to-morrow," don't make the mistake of agreeing. If the person seems worth attention, give the article freely, but say politely that you really keep no books, and that he or she need not mind paying for it. The chances are you will get the money, but, even if not, you will have avoided breaking your cash rule, and impressed that rule on the person's memory in a pleasant way. A regular customer once ordered a sack

of flour "till to-morrow," when he said he would get his pay, but the cash grocer had the tact to say it was against his rules to book a half-penny, even to the mayor of the town! Then, handing out a large loaf nicely, "This will last you till to-morrow, and you are welcome to it." Probably this was not according to the customer's plan, but the crux was got over, and the loaf was not lost either! What is necessary on such occasions is, no quiet talk or dawdling, but cheerful, off-handed tact and energy.

It is, however, very easy to sing the praises of ready-money business; hundreds of great moralists, judges, and philosophers preach or write on the evils of credit, although most of them know exceedingly little of actual business. "If you can't pay for a thing—don't buy it." "If you can't get paid for it—don't sell it." Just so, but Mr. Ruskin, like many other high and mighty ones, probably knew more of other matters than practical shopkeeping. We have all known many cash grocers who have failed, and many others who have realised great wealth from extended credit business. As already stated, much depends on the neighbourhood and class of customers. Most of the big people want pass books and credit; the wives of bankers, clergy, and other professional gentlemen will not trouble to be paying cash every time they require an article. To do business with high-class families, credit is almost indispensable. Of course, it requires large capital, so that it is absurd for a man of small means to pretend to offer credit; but if the pass-books show good profits, and the working expenses are not too heavy, such a business is often the most valuable. Cash customers undoubtedly want things cheap, and they buy anywhere, but those who have an account open will as a rule buy all at one shop, and their servants will have to go there. It is also human nature to buy more freely when payment is to be made in the future. In these cases every enquiry should be made as to whether the persons are worthy of credit, and how they pay their bills. Never believe what people say about themselves if they are seeking credit! If retailers would only use the same judgment and common sense in giving credit as they ordinarily do in buying their goods, there would be less trouble and fewer failures. If you offer credit, confine it to safe buyers, and let the time for payment be well understood, weekly, monthly, quarterly, or otherwise. People who receive weekly wages should never have longer credit. Many a good customer is spoilt by irregular credit. Carelessness in sending in the bill, or delay in calling for the money, is pretty certain to end in trouble. Whether you need the money or not, send out and collect all accounts promptly. If any customers have got into your debt and cannot pay, don't refuse supplies, but explain how awkward it is, and urge them to try and pay you soon as they can; also, in the meantime, promise to supply them cheaply as you can for ready money. This will be better than a rebuff, or refusing credit, in a cold harsh manner, and driving them to buy for cash elsewhere. When customers turn on you by asking if you doubt their word, their honour, etc., you can say "No." You have the utmost confidence in them as to that, but fear they might not have the money when you needed it, and your business often demands every shilling you can raise! Honesty alone won't pay debts. Ability to pay must also be taken into account. Show them they may be absolutely honest, but unable to pay in time. A post-dated cheque, or even a promissory note, is often better than a mere promise to pay at some other time, and you may often get a portion on account from people when they cannot pay all at once. It is a bad plan to let cash customers

know that you are supplying others on credit.

Branch Management.—The simplest way of managing branches is to keep a ledger account in a special book with each branch as you would with an ordinary credit customer. Purchase, receive, unpack, and examine all goods at head warehouse, so that you may see condition of arrivals, test weights, and claim damages at once from senders or carriers.

The stock for an ordinary branch need not exceed 10 or 14 days' turnover, especially if there be a fair show of plate-glass and fixtures, and it be not far from headquarters.

Let the manager send in his "List of wants" weekly, or semi-weekly, say Mondays and Thursdays. Weigh out and deliver on Tuesdays and Fridays, adding thereto any fresh goods you want him to sell. Make out an invoice in a duplicate book with carbon paper and pencil, charging every article at exact retail prices, bacon at the price expected for the whole piece, including back, streak, collar, gammons, flank, and hocks; or else at cost, plus the percentage of profit expected; sugar paper at the retail price of the sugar, and tea paper at tea prices; parchments, cheese cap, bags, royal, etc., at cost; packages at selling prices. Deliver invoice along with the goods, and require manager to sign for the total cash value of each invoice on his receiving and checking goods and invoice. That receipt should then be attached to the copy of invoice which remains at headquarters, and the total value entered in the ledger. Give manager strict orders to obtain formal receipts or credit notes for all cash or goods or packages which he returns from branch, also for any reduction in prices, breakages, or other allowance you may sanction, and post the amount to the credit side of the ledger account.

Some firms allow 1 to 2½ per cent. for leakages or depreciation in the goods supplied, others allow only ½ per cent., while some make no allowance at all beyond actual breakages and loss.

Of course, no man can keep his stock right, and at same time be honest to customers without some such allowances. There is always a shrinkage going on in sugar, tobacco, soap, and certain other articles which a slight gain in bacon, lard, etc. may not cover. Much depends on the class of trade. Where ¼-lbs. of cheese, butter, etc. are the usual order, the allowance should be greater than where larger orders prevail. Whether credited or not, there must be a shortage in stock, and the manager should not be driven to practise "rushing." Some of the limited companies charge for everything. Thus, a chest of tea weighing 98 lbs. nett, and requiring 6 lbs. of paper or bags, is charged as 104 lbs., to sell at 2s. per lb., and to realise £10 8s.

To weigh this up in ¼ lb., ½ lb., and 1 lb. packets without loss requires clever manipulation, and we have heard of many dodges being resorted to:—(1) Leaving the chest of tea in a damp cellar for a few hours, thus causing it to absorb 3 lb. to 6 lb. of moisture, or weighing the tea up short, and leaving the packets there at nights. (2) Adding 5 lb. or 6 lb. of moist sugar to each chest of tea; the sugar being rubbed in dust and moisture until dyed dark as the tea is, then mixed, and weighed as required for sale. (3) Short weight is often given to regular customers who are known to be careless. (4) In many cases a low priced tea is sold at a higher price, say 1s. 4d. quality at 2s., or inferior tea is mixed with the better, so as to obtain a like result.

Stock should be taken, any allowances made, and the ledger balanced every month. To frustrate dishonesty some firms give each assistant a section of the shop to look after,

and make him responsible for it, and when results are good award premiums to manager and such employees. The above arrangements should suffice to keep branch stocks right. Then, as to the manager's remuneration, it is considered a good plan to pay him partly by weekly wage, and partly by a percentage on the weekly sales. Some firms allow the manager 5 per cent. on gross takings wherewith to manage the branch and find his own assistants. Others allow him half the nett profit monthly. In this case all goods are charged at nett cost, and it is necessary to calculate as closely as possible the branch rent, rates, taxes, gas, fuel, carriage or cartage of goods to branch from head warehouse, interest on capital invested, etc., and charge the monthly average to a separate and private account of the branch; also enter therein the actual amount paid in wages each month. Every manager, on his appointment, should be required to sign an agreement, and retain a copy of it, as to selling for cash, or giving credit, as to taking cheques, checking and signing for stock on hand, and subsequent addition, keeping accounts, getting receipts for cash, goods, and empties returned, also as to ordering goods, or buying odds and ends, opening letters, etc., etc.; also to make no deviation from any written instructions without special permission in writing. Some managers have to sign a paper saying that all surplus balances shall belong to the employer, and all deficiencies are to be made up by the manager. The proprietors of branch shops should be careful and prompt in systematically informing their managers of the law's requirements, and especially of the most recent decisions in connection with the articles they sell; such as seeing that no poisons are sold, that "yellow crystals" are clearly labelled as such; that all coffee, mustard, and cocoa powders are clearly labelled as mixtures; that boys be not employed about the shop for a longer period than 74 hours per week (mealtimes included); that all weights and scales must be correct and properly stamped, etc. All such instructions should be given in writing and dated, also copies retained, so that if necessary proof could be given in court that such instructions were given and acknowledged. It is also desirable to provide a time sheet, to be hung up weekly in each shop, whereon every assistant must enter the time he enters and leaves, morning, noon, and night, and that the manager send such time sheet to headquarters every Friday. The proprietor should endeavour to visit each branch frequently, in order to consult manager as to improving trade, and to listen to and consider all suggestions.

Seasonable Goods should always be ready early. At Christmas time, and in a suitable thoroughfare, it is a good plan to exhibit a made-up parcel of seasonable commodities, surmounted by a list of its contents and total cost. Gentlemen, as a rule, hate waiting about in shops, but will often go in for a parcel if it is seen to be ready.

The sale of "Christmas Hampers" has for years been advertised by the same firms, so it doubtless pays. Fancy biscuits, cakes, bon-bons, etc., sell easier before Christmas Day than after, and it is better to have too few than too many, for the loss often exceeds the profits.

Two or three days before Shrove Tuesday is a good time to push "Pancake Flour" in paper bags. Shamrock is wanted for St. Patrick's Day. Tinned fish may be shown well in Lent. Eggs sell well a few days before Easter; also currants and raisins for "hot cross buns." Nuts and apples for All Hallows Eve. Every district has also its special days and fetes, which should be prepared for well in advance, but with caution.

Here is a cutter's own advertisement during fair days, jubilees, and estivals:—*Combination Parcels* ready made up, and each containing 24 articles in daily use:—

	Regular Prices.	Special Parcel Prices.
	d.	d.
1 lb. Best Lump Sugar...	2½ ...	1
1 ,, Fine Moist do. ...	2 ...	1
1 ,, Caster do. ...	2½ ...	1
1 ,, Brown do. ...	1½ ...	1
1 ,, Good Rice	3½ ...	1
1 ,, Flake Tapioca ...	3 ...	1
1 ,, Best Corn Flour ...	6 ...	4
1 ,, White Starch ...	4 ...	2
1 bar Yellow Soap ...	8 ...	6
1 parcel Blacklead, Blue, and Blacking (the lot)	6 ...	4
2 lb. Best Soap Powder...	6 ...	4
1 bottle Vinegar (wine qt.)	9 ...	5½
½ lb. Excelsior Tea ...	1/6 ...	1/2
½ ,, tin French Coffee...	9 ...	7
¼ ,, Ground White Pepper	7 ...	5
¼ ,, tin London Mustard	6 ...	4
1 ,, New Currants ...	5 ...	3
1 ,, Valencia Raisins ...	5 ...	3½
¼ ,, Mixed Spice... ...	4 ...	2½
½ doz. Large Nutmegs ...	4½ ...	3
1 tin Best Baking Powder	6 ...	4
1 doz. boxes Matches ...	1½ ...	½
	10/- ...	6/6

"Cash buyers may here secure a 10s. parcel of really useful family groceries for 6s. 6d.," and any experienced grocer on dissecting above will be able to see working expenses if he sells a large number. Of course, these "Combination Parcels" are more suited to bargain hunters than to regular customers.

Account Keeping.—We have all heard much preaching from different quarters about the necessity of thorough book-keeping for small traders. Nothing short of the strict double-entry methods would appear to suit the professional gentry, but it is not every business which will afford a competent bookkeeper, or even allow the trader to devote much of his own time to such tedious elaborations. Many a shopkeeper would have infinitely more transactions to record than an ordinary wholesale merchant turning over twenty times the amount of money. Really, it often seems absurd how professional gentlemen wax so eloquent on the subject of double-entry bookkeeping. Those who have to pay the expenses do not always think so highly of it. Instance the beautiful exactness displayed by accountants, chartered and unchartered, in writing up and figuring out balance sheets for insolvents and bankrupts. Every penny may be religiously accounted for, but at a cost very cruel to everyone except the said professionals. After all, it is poor satisfaction to spend pounds to save shillings, or to waste a shilling's worth of time in discovering a penny. A strict adherence to double-entry book-keeping would probably result in more failures than the rule-of-thumb methods hitherto prevailing. However, the man who merely wishes to keep accounts adapted to his own business and for his own satisfaction may find the following hints very helpful. Many a shopkeeper has really no order at all in keeping his papers and accounts, the consequence being that when bills have to be paid, there is much confusion and delay in ransacking desks, drawers, shop shelves, canisters, pockets, and old bill files, before the required papers are found. A much better plan, and a very easy one, would be for such a trader to arrange his papers himself, as follows:—First procure a couple of empty portfolios, or the empty covers of two old books about four times the size of this page (say 9¼ in. by 11 ¾ in.). Don't have the covers too thick or stiff. The limp

holders commonly used for railway time tables, or other periodicals, will generally suit very well. Label one of the portfolios "No. 1" and the other "No. 2." Then take your loaded bill file, and in No. 2 portfolio (we will speak of No. 1 by-and-by) place all invoices, statements, tax papers, gas bills, etc., which are unpaid, as well as any letters, carriers' notes, weight notes, receipts for empty packages returned, credit notes, etc., which are connected with the unpaid bills.

When you have added to them all similar documents from your pockets, drawers, and canisters, etc., arrange them all carefully in alphabetical order, until you have all Messrs. A——'s papers at the beginning of the portfolio, Messrs. B——'s papers next, Messrs. C——'s next, and so on to the end. Gas bills should go among the G's, School bills among the S's, Rate and Tax papers among the T's. If you cannot arrange them well yourself, you can easily ask some clerk or neighbour to help you for an hour or so. When complete, close that portfolio, tie a string or piece of elastic band round it, and lay it aside.

The remainder of your old papers, paid bills, etc., may then be sorted, and arranged alphabetically in like manner, each firm's invoices, etc., following each other according to date, and the whole of them then placed in a drawer 6 or 9 inches deep, so that each paper may stand upright. If any documents be too large, they may be folded till same size as the majority, taking care that the names of the firms front one way. Into this drawer, and in its proper place, will afterwards come all accounts with their invoices, letters, etc., as soon as they are paid, and removed from No. 2 portfolio, but not until they are paid. In No. 1 portfolio may be placed all papers as they arrive, such as letters which require answering, invoices which arrive before the goods, price lists, and other documents which are waiting until you have time to attend to them, or until they are ready for placing in No. 2 portfolio. Never put an invoice in No. 2 until the goods are received and examined, the charges found correct. If anything is short, make a note on the invoice, gum or pin the railway note to the invoice, and, when correct, remove the invoice and its notes to its proper position in No. 2 portfolio. These portfolios and the drawer will be very easily managed when once put in order, and any account may then be found in an instant. If Mr. C. calls in for his money, you will only have to open No. 2 portfolio at the place where all his papers are, and you will perhaps find there is a carriage note to be deducted, an empty package returned, but not allowed for, or a receipt for carriage paid for that empty. You will also possibly have the card, or price the traveller left with you when he sold you the goods, or some other note made by yourself of some matter you want to ask about. Tradesmen often forget to deduct these small items at the proper time, when paying accounts, and only remember them when too late. Other advantages of the above system are all papers are kept clean, straight and tidy. A man can also easily carry his portfolios, and look over them at his fireside in the evening, see what he owes, and decide which account to pay first. There will also be no danger of his paying a bill twice, and if he wants to see any account he ever paid, he can go to his drawer and find it in about one minute.

Another good plan is to keep a flap file for the letters and orders you receive from customers. Number each with large figures in blue or red lead or ink at that end which hangs down, and if you then write the names and numbers in a small index book, you will always be able to find any letter or order in an instant.

Some tradesmen also keep a file and index in the same way of all the price lists, cards, and circulars which they receive, and in this case it is often best to index the name of the article instead of the name of the firm, or both.

When the files are full you can either move the papers on to a cord, or leave them on the old file and begin a new one, but continue the numbering and the old index.

Cash Accounts. — Every trader should also keep a cash book. It is best to get one with wide leaves, so as to have room for several cash columns ruled on each page. On the left-hand page should be entered all cash, cheques, bills, etc., *Received.* It should be ruled with:—Column No. (1) for dates; (2) for name of payer and what for; (3) for money drawn from bank; (4) for private money received (such as interest, rents, etc.); (5) for shop takings, and bills paid by customers; (6) discount and other allowances received from creditors; and (7) a total column for each sum entered in columns 4, 5, and 6. On the right-hand page of the cash book should be entered all cash cheques, bills, etc., *Paid away*, and should be ruled:—Column (1) for date; (2) for name of party paid and what for; (3) for money, cheques, etc., paid into bank; (4) for cash spent in Personal and Household expenses (such as rent and taxes of private dwelling, food, drink, clothes, doctor's bills, servants' wages); (5) for business or shop expenses (such as rent and taxes of business premises, lighting, assistants' wages, carriage paid, discount allowed to customers, and other money that never comes back); (6) for goods, materials, horses, carts, shop fittings, utensils, and such sums as you expect to receive back again; and (7) a total column for all the payments carried out from 4, 5, and 6. By adding up the two total columns (No. 7) you can at any time see how much you have received and how much you have paid, and you should have the difference either in your pocket, safe, or bank—it does not matter which. You can also at once make sure your cash account is right by adding up the other cash columns, 4, 5 and 6, to see they agree with the total shown at foot of No. 7. Some people add up their cash book every day; some once a week, and others once a month, but the oftener it is added up the easier it will be to recollect anything forgotten. This cash book is very easy to keep, and when added up correctly, will help in making out the yearly income tax return (see p. 1118), for it will show how much business you have done during the year, what your expenses have been, and it will in many other ways be a valuable guide as to how the money has come and gone.

The above arrangements, and a *Letter Book* with carbon paper or copying press to copy all letters and orders he writes will enable a shopkeeper to get through a lot of business very safely and very easily.

Bill-heads and Bottle Checking. —The following billhead, with slip at the foot separated by a perforated line illustrates the simplest and best plan we have seen of keeping an account of the goods had and prices paid by a customer, also of bottles, jars, etc., delivered and received back empty. The billheads are printed and made up into books of 200 leaves, so as to provide 100 bills, and 100 exact copies, by the use of carbon paper and a pencil. Every book bears its number on every leaf, and the billheads in duplicate are also numbered consecutively from 1 to 100. The specimen shows bill No. 22, in book No. 14 and the upper perforated line shows where the bill is to be separated from the book. The slip at the foot bears the same number as the bill. The bill itself shows the number of full bottles, etc., and on the slip the porter enters all empties received back from a customer on delivery of

FORM FOR BILLHEADS WITH BOTTLE CHECK.

14/22

*M*_____ *Date* _____, 1901.

From **JAS. McGOWAN,**

Tea and Coffee Merchant, Wine, Spirit, Ale and Porter Bottler,

273 and 297, West Derby Road, Liverpool.

Telephone 54 *Anfield.* *Terms—Cash.*

[Of course the Billheads are much longer than this, which is only intended to show the heading and the foot-note or slip.]

14/22 Date.	Syphons.	Pints.	½ Pints.	Screws.	Flagons.	Spirits.	Jars.

goods. Family traders keep one of these books for each regular customer's account, and thus require no other Order Book, Day Book, nor Journal. Each book bears the customer's name outside its paper cover, and all the books stand in alphabetical order in a case behind the counter, so that when a customer or a message arrives the book is ready for the order to be entered in it, and the state of the account is also seen. When cash or returns are received they are at once deducted, and any balance owing may be brought forward from one bill to another, or the total of each bill may be posted in a ledger. The bottle accounts are kept in a separate ledger ruled something like the above slip. The customer's name appears at the top of the ledger page, and the Dr. side has ruled columns for:— (1) The date; (2) No. of book and bill; (3) syphons; (4) pints; (5) ½ pints; (6) screws; (7) spirits; (8) flagons; (9) jars; while the credit side shows similar columns for empties received back, and easily copied from the slips, which the porter detaches and brings back with the empties. By adding up these columns occasionally the empties owing by any customer are easily known. Mr. McGowan, the inventor of this system, carries on a large bottle trade, and has found it work quite satisfactorily for many years.

How to Take Stock. — Stock-taking should be arranged for a slack day, or night, or morning. The goods may be got in some kind of order during spare moments the day before, by using a little tact, collecting each class, and placing them ready for counting, weighing, or measuring. If the shop is a small one it will be easy to have each make of black lead, cocoa, baking powder, etc. by itself, instead of a box or two here, a few packets on different shelves, or others in window. Counter samples may be removed to their fellows on the shelves, and each brand of pickles, sauces, jams, tinned foods, arranged in rows of equal count. Try to manage this sorting beforehand, so that in writing your list you may have the whole stock of each commodity together, and not a little on one page, and more driblets of the same thing on others. Much may also be done in looking over beforehand bulk goods, such as split peas, sago, rice, etc. Some people advise including in same entry every package, broken or unbroken, of same goods, whether in wareroom or shop, but this is not advisable when actually taking the stock, as it may lead to goods being either entered twice or left out altogether. In taking stock the safer plan is to count and enter each lot just as it stands, on the floor, shelf, counter, or window. Any grouping or arranging is best done before or after. For instance, if after the stock has been taken, each line carried out, and the whole totalled, it may be well then to group, tabulate, or classify the commodities neatly in a proper stock-book, so as to show the whole stock of each by itself. When the totals are found to agree, the grouped list obviously becomes the most interesting, for the whole stock of teas, coffees, sugars, etc., etc., may be known at a glance. The tare of every drawer, canister, bowl, vase, or other utensil is, or should be, already permanently marked thereon, so that the nett weight of contents may readily be found:—Bins, tanks, bunkers, and casks of dry or liquid goods, such as apples, oranges, onions, treacle, vinegar, etc., in bulk or otherwise, and which require more time to compute, should be certainly entered in the list as met with, but the measuring, weighing, or gauging may be left blank for the present, and filled in more deliberately at the finish. If the establishment and the stock be large, each man should have his separate section to take, preferably the one he is best acquainted with or best fitted for. A few temporary chalk lines on the floor, or wall, or counter will define each section. Indeed, it is highly desirable that two persons should work together, one examining and counting, and the other checking and writing down. The work should be done without much talk, and the proprietor or manager, having told off each pair of hands, should be quietly supervising the whole business, or settling any difficulty that arises, making notes of any damaged or unsaleable goods, and other matters to be seen to afterwards. Mistakes are often made carelessly, or even wilfully by reckoning as full, boxes or parcels which have been broken into.

The carrying out of the figures may be done either at retail price or cost price. In a branch shop the prices should be the same as those which have been charged to the shop, and these are usually the full retail prices. In head or single shops, it is best to carry every article out at nett cost, or as nearly as can be reckoned.

Fixtures, fittings, utensils, horses, carts, etc., are usually entered at cost price, and 5 or 10 per cent. deducted every year afterwards for wear and tear. These items are, therefore, merely to be brought forward every time stock is taken, and any new purchases added. Each pair of hands should sign every rough sheet of stock they have taken,

thus:—Counted by J. Smith; checked out by T. Roberts—so that any error may be afterwards traced to the perpetrator, and for this reason, and others regarding fire insurance, etc., the whole of the sheets should be carefully retained by the proprietor. To prevent uncertainty, every sheet of paper given out for the stock-taking should be numbered, and only written on one side. In the case of branch shops, the name and address of the branch and the date should likewise be written at the top of each sheet of paper. Always begin a line with the name of the article, also state size, quality, or brand. The counting is best written down in dozens, and fractions of dozens; thus, instead of 25 tins "Crown Salmon" and 63 tins of lobster, write "Crown Salmon" $2\frac{1}{12}$ doz. in one line, and "Lobsters" $5\frac{3}{12}$ doz. in another. Never make two entries in the one line. After collating the various sheets of stock, and making sure that no sheet is missing, they should then be arranged, not according to the numbers, but according to the sections of the shop or warehouse, so as to correspond as nearly as possible. When that is done the pages may be numbered, and the original numbers crossed out. It is also well to take the shop, store room, or warehouse in exactly the same order on every occasion. If the shop has to be open, and business going on same time as stocktaking, particular care must be taken to avoid confusion. For instance, if stock be taken in the morning, it will be best for the salesmen to keep an account of every article which they sell from stock which has not yet been taken, and the total of these items must afterwards be added to the list of stock. If the stock be taken at the latter end of the day, it is simplest to keep an account of every article which is sold or packed from stock that *has been taken*, so that the total of these may be deducted from that day's business and entered in the following day's business. Some companies, which take stock often, use a special book with the names of articles sold printed therein, and indexed like a ledger or a "Where is it?" book, and with convenient space for entering the quantities of stock, also cash columns for the totals.

Combination in Buying.—Joint buying by single shopkeepers is undoubtedly a profitable and desirable arrangement, especially where quantities and terms are beyond or unsuited to the wants of individual small traders. There are several methods of effecting the same end. An excellent set of rules for a buying pool is given at page 1116, but in many towns it has been found sufficient for a few friendly grocers to arrange for one of them to buy direct from the makers a certain commodity on best terms, and then for the others to send to him for their supplies. The other members undertake to buy other articles direct, and share them out in same way. A spirit of *camaraderie* is all that is necessary. There need be no expenses, no special warehouses, porters, or managers needed; no subscriptions, and no risks, and they can admit those friends they choose, and keep out cutters not wanted; also sell at their own agreed prices. Country traders also may combine to buy certain articles in quantity, and distribute among themselves on any terms they choose, so as to keep their stocks low and fresh; also encourage mutual goodwill.

Own Name and Labels.—There are always cheap and plausible manufacturers, without any reputation or name of their own, who offer to put up goods with the retailer's own name on. Of course, if an article of the highest quality can be procured under the retailer's own name or label at as low or lower price than one under any well-known manufacturer's name, and if permanent supplies can be ensured, the plan may have good results; but

great caution is necessary, and, as a rule, little faith should be placed in manufacturers who cannot sell their wares under their own names, for they usually aim more at profits than quality. Experienced retailers are not often caught, but the idea of seeing their own names on labels is very flattering to new beginners, and some firms, who ought to know better, have burnt their fingers in the attempt to sell imitations as their own brands. The first parcel may be pushed off rapidly, especially if customers be numerous, for most of them may be induced to try the article, and the credulous retailer soon jumps to the conclusion that it is a success, the sales for a given period are compared, larger purchases or contracts are entered into, and probably a host of other articles are introduced on the like basis; but eventually it is found that the customers have had enough, and are buying their favourite brands elsewhere. The bubble is burst, the demand, instead of increasing, collapses, and the stocks on hand result in a loss far exceeding any profit which has been made. Reputation is also lost, and there is the increased responsibility for the vendor under the Food and Drugs Acts. A retrospect of the last 50 years will convince any observer that "imitations" and inferior products rarely if ever succeed. In groceries, we cannot remember one. Besides, when customers ask for some well-known brand, and you try to substitute one bearing your own name, it arouses suspicion at once, and, on the whole, injures your trade, for they probably know well enough that you are not the manufacturer, and that you are only aiming at extra profit.

Prize or Present-giving Schemes. —The practice of paying high prices for goods to obtain a so-called prize or present, is but the revival of an old play upon the cupidity of the ignorant. It has justly been likened to that of feeding a dog with his own tail, but is even more curious, for, as a rule, the receiver pays twice the value of the article before receiving it. The morbid acquisitiveness of a section of the community—particularly the more ignorant portion—is so strong, that it seems to quite overpower their common sense. Foolish women will often walk for miles out of their way to pay 2s. to 2s. 6d. for a shilling or fifteenpenny article, if it is nicely baited with a 3d. or 6d. "prize" or "present." They never reflect that they are paying dearly for the prize as well as for the article, with a goodly margin for the shopkeeper as well. Of course, so long as there is a fair number of these deluded ones, so will there be traders, both retailers and manufacturers, ready to pander to their folly, and fatten on it. This mania for getting something for nothing has a powerful attraction for the selfish in all classes of society.

Shop Assistants. — *Hints and Helps.* — Nearly every leading grocer of long experience who has spoken or written about assistants during the past dozen years has complained of the dearth of really competent men. Some attribute the falling off to the decay of the apprenticeship system, others to the long hours and the poor pay, or to the uncertainty of employment after a certain age. Whatever the cause, the fact is undisputed that good men are scarce, while there is always a superfluity of mediocrities or doubtful hands. It is certain no man can excel at anything without special study and training, but let us follow the average youth through his career. He probably leaves school as soon as he has learned to read, write, and sum, or he may have a fair general education, but without any special education adapted to the trade he is to follow. The grocery being an easy trade for a boy to fall into, and one which promises the most *immediate wages*, he avoids apprenticeship with its premium and small pay, is soon at work, and when he becomes able to weigh up, fold, and parcel in the warehouse, he is reckoned to be fit for the shop, and begins to serve custo-

mers across the counter, or he may, in a smaller establishment, be doing all these things at once from his commencement, but there his training usually ends. The hours are long, and unless he is heroically determined to improve his education by night study — "read up" his trade, learn book-keeping, business correspondence, the art of writing tickets, drawing up advertisements, price lists, etc., also learns all he can about the goods he is daily handling, he seldom or never rises in market value above 20s. or 30s. a week. He may be worth a little more if he becomes clever at his work, but it is only a matter of two or three shillings per week. This mediocre position has, perhaps, been all he has aimed at, or prepared for, and by the time he gets it he has little inclination for qualifying further; the mind has settled itself in other grooves. To be in the trade, have an apron on, and be well up in trickeries and shop slang has been thought sufficient. His reading has probably been confined to comic papers, police reports, or tale books; his leisure hours devoted to trivial amusements; and his wages spent almost before being received. The result is that such a man has only a superficial knowledge of the trade; and from this period his energy flags, his importance begins to wane; the activity of 25 is preferred before that of 35, and he has to go. On the other hand, men who have served a proper apprenticeship, kept on educating themselves, mastered the special literature of the various branches of the trade, persevered in acquiring an intimate knowledge of goods, their composition, qualities, sources, and primary markets, studied the requirements of the public and the best methods of business, as well as dexterity, and economy in manual operations—these men are always in demand. There are plenty of vacant places in the higher walks of every trade for real assistants who give themselves without reserve to the business interests of their employers. The scarcest thing in the world to-day is a thoroughly competent and reliable man. Indeed, the cry that comes from all great establishments and mercantile offices is for clever, enterprising, and trustworthy men, who have shown that they know how to do things and will do them. Pretensions, dress, length of time in the trade, hopes and promises, won't do. There is hardly any limit to the salaries men can obtain if they will but first fit themselves for superior positions. Capitalists abound, but capital alone is now well-nigh helpless. No matter how wealthy a young man's family may be, the place for him to start in business is at the bottom. Youths are apt to think otherwise. They are often allowed to shirk or evade the lower ground work, and it is only when the father's death puts them in command that the mistake is discovered. Unless there is some partner or trusty manager at hand, capable of carrying on affairs, failure almost invariably follows. In fact, capital is much more dependent upon the intelligence, skill, and industry of moneyless men than such men are upon capital. We are told that in the hard old times when the world was young it was the cave dweller who could run the fastest, jump the farthest, and strike the hardest that secured the largest store of meat and pelts, but things have changed since then. The hardest work is not now the best paid; men are not rewarded according to size and strength. Indeed, money itself has no longer first place. Thought, tact, and shrewdness have displaced physical force. The brain is now the chief winner. To compare, classify, and value minutely the various growths and qualities of teas, coffees, chicories, cocoas, spices, cereals, and other products, both separately and in combination with other adjuncts, should be specially interesting and profitable to every budding grocer who would excel as a

connoissenr. There are tasters and valuers of tea, spices, hops, butter, etc., for instance, who often receive from £500 to £1,000 a year for qualifications which depend chiefly on the palate and the nose—taste and smell. Yet there are probably thousands of young men in the grocery trade who have never taken the trouble even to ascertain whether they do or do not themselves possess these delicate senses in the highest degree of acuity. Every man should therefore investigate himself, and discover his natural qualities. A thorough knowledge of his trade theoretically and practically is one of the most important assets an assistant can have, and it is quite as good as cash. Never before was retail business so much in the hands of capitalists who know so little of the trades they control. Masters frequently depend largely on their capital, position, and prestige, but expect their men to know more about actual management and shop work than they know themselves. The principal may have been brought up as a farmer, miller, or in any other business. Important concerns have often to be conducted by trustees, executors, etc., who therefore need efficient managers, and assistants, who know *all* the business, and can tell when work is done rightly. The strongest house, with a weak management, must, no matter how old or how respectable its history, surely go to the wall. Many have done so, and many are doing so now, while weak concerns with strong management are becoming strong and powerful. Never before were there such chances for young men, without money or outside patronage, to attain high positions in the management of these concerns, if they would only qualify themselves; and never before were there such opportunities of acquiring superior knowledge so cheaply. Educational facilities were never so abundant. Technical instruction is offered on every side. Books may easily be had on any subject, and at almost any price. As to the work, when was it easier? the hours shorter? or the necessaries of life cheaper? Refer to history and ascertain the facts! Great mistakes on these matters are sadly prevalent, and the consequence is men are misled, and don't enter into their work with a right spirit. They lack true ambition, despise their work, seem to think they were born too late, that all the best places have been taken, all valuable discoveries made, all the treasures of nature and industry revealed and appropriated, and that nothing remains for them worth their attention. Instead of recognising their own talents, employing their own forces, and forging their own way legitimately, they sit down to look on indifferently, indulge in pessimistic slang, and talk enviously about others, frequently seeking a living by trickery or downright dishonesty. The average assistant too often only wants a "berth," or an "*easy crib*," as he calls it, and rests content if he thinks he just about earns his "screw," or is willing to earn it, or earns it as well or better than some of his "pals" earn theirs. He cares little whether the "boss" succeeds or fails. Pleasure and recreation are carried to excess, they engross too much thought and attention, and become the objects of life instead of being subordinated to business. Some people are always comparing their work with their wages, and are mortally afraid of doing a jot more than they are paid for. These debasing influences tempt men—especially young men—from their duty, and lead to a very poor and unworthy view of things.

No employer can estimate an assistant's value exactly at sight. That is discovered afterwards, and, of course, depends entirely on the person's own abilities and exertions in helping forward the prosperity of the business. To get on and be appreciated a young man must ven-

ture to do more than he is paid to do. He really creates his own position! When he achieves more than his employer expected he shows that he is valuable. The man who will do nothing beyond what he's told to do is only a tool. Eye-service, that depends for fidelity and industry upon the employer's presence, is also poor assistance. The fact is that in every station, from the highest to the lowest, a man must do his best and show his worth before he receives his reward. Everyone has to do it, whether he be engaged in the arts, sciences, or grocery; or whether the rewards be at the rate of £500 or 5s. a week. It is absurd for a man to imagine he can first jump into a high position, and then begin to qualify himself for it. He must qualify *first*. A professional student for instance, has to work hard for many years before he receives a penny, but when efficiency, willingness, and determination are there, the rest is comparatively easy. If an employer has promised higher wages at engagement than he afterwards finds the man is worth, he soon has to alter things. If he notices the man is worth more he will generally raise the pay in order to keep him. Not as soon as expected, perhaps, but a reward in one shape or another is bound to come from one quarter or another before long. If an employer selfishly ignores or belittles an assistant's value, or fails to reward it, someone else is pretty sure to find it out. A light cannot long be hid. Someone is certain to observe a man of the right sort, and the way to promotion will soon open itself out. Therefore, resolve to make yourself valuable daily in every way you can. Be the master of your work in every detail. Determine from the first day to the last to help your employers to the very best of your ability. Surely you can find opportunities; they will crop up on all sides. Never mind if you do earn twice as much as you are getting—many an employer is doing that! The employer, if he has a business head, is doing his best for his customers, the public, and it is with the same object as yourself. The more earnestness, skill, and thoroughness each can throw into his efforts the better.

No one will say it is possible to satisfy every employer. There are mean and unreasonable individuals in every trade. Some expect their assistants to tell lies for them, palm off unsaleable articles, misrepresent goods of inferior quality, invent plausible excuses for being out of stock of a brand required, and substituting another as "equally good"; he must say his employer is "out" when he's "in," although the latter may be a churchwarden, chapel deacon, or class leader. He must, of course, have his underlings scrupulously truthful and honest *to himself*, and will regard the boy a hopeless failure who tells a fib to save a blowing-up. Some employers and managers are altogether harsh, coarse, and unjust; others are careful never to praise or show appreciation, as though they verily believe it would be ruinous to offer any encouragement. They never think of admitting to an assistant that he is valuable, or that they have learnt anything from him. The more a man tries to please them the more they flatter themselves that their gruff uncharities are correct. They rarely speak except to sneer, disparage, pick out flaws, and condemn. Indeed, their eyes seem shut to everything but fault finding, and if real faults be lacking, their warped judgment will invent some. Even if a cynical smile should escape them, it is scarcely less repulsive than their carping criticisms. Such miserable men are to be pitied, but the atmosphere is a bad one for everybody, and the best thing the young assistant can do is to consider his position calmly, and, if deemed intolerable, he should at the proper time quietly give in a

respectful notice to leave. This will be much better in every way than giving way to temper, turning saucy, bandying angry words, and quarrelling in the midst of business, or throwing down his apron and going off in a huff. A prudent man or a well-bred youth will always control his temper, and ever make it his duty to plod along, and serve his last day, week, or month as honestly and faithfully as his first. Not only will it redound to his character afterwards to have it known he acted so honourably under trying circumstances, but it will always be a satisfaction to his own conscience. On the other hand, an uncontrollable temper on the part of an assistant often lands its owner inconveniently on the streets at short notice, out of work, not unfrequently blighting his whole career. So does a morose and surly disposition, an unreadiness to apologise when an error has been made, or an indiscretion committed. Said a busy grocer one Monday morning, when he had rung for one of his warehousemen, "John!" said he, "why did you strike the shop lad?" A vacant stare, but no reply. "You know I don't allow that sort of thing." "He shouldn't be cheeky, sir." "That's no excuse," said the worthy grocer, "I'll have no brutality here." A sullen look from John, but not a word of apology. "You'll have to go on Saturday night." "All right, sir," muttered the man. An eye-witness of the above scene, on passing through the warehouse, thought John looked troubled, so said, "Why did you not tell him you lost your temper? Go and tell him you're sorry!" In he went, and soon returned with a red face, but a smile, and a nod, showing all was now right. It might of course have ended otherwise. Every conscientious employer knows that personal violence is subversive of all discipline. Hundreds of stupid people are losing good situations daily, simply because they have not the sense to apologise readily and respectfully when in fault. An obstinate reticence, and a sulky look, give the impression that little is cared for either the employer or the place, and that the offence may be repeated. This failing seems to be an old one, for Prov. 29 v. 19 tells that "A servant will not be corrected by words, for though he understand he will not answer." Customers also are frequently lost through the same cause. A mistake has been made, irritation follows, and for want of a timely and graceful apology, future business goes elsewhere. It is foolish to argue with either customers or employers. Unmannerly, forbidding, and ill-tempered fellows should always be kept out of the way of customers, and relegated to other duties, separately if possible, where they may expend their surplus energy and fieriness on some manual labour, rather than in quarrels.

Regularity and Punctuality are excellent traits of character, and even more valuable to a man himself than to his employer. Many a busy day's work has been blasted by tardy arrival, and many an employer is compelled to frown on such liberties. If absent through an accident or illness, send a note or message at once, to arrive before you are due, instead of neglecting it till next day. If you want a day off, or even an hour or two, ask permission in good time, so that arrangements may possibly be made without inconvenience, but never ask off unnecessarily.

Loyalty to employers is also obligatory, both in the establishment and outside, it includes faithfulness during business hours, and at all times. The assistant who betrays confidences that may have been entrusted to him, or exposes to others any peculiar frailties or supposed faults or absurdities of the man who is paying him is a very contemptible fellow. If he considers his employer is dishonest, or in some other particular unworthy of conscientious support, he should quit his service, but no one

will respect the assistant who derides his employer behind his back, divulges secrets which may have casually come to his knowledge, makes unfavourable comparisons between his employer's system and those of others, blabs the shop takings or business weaknesses and methods in order to injure and discredit his master in the estimation of others who will listen to his twaddle. What would be thought of a barrister who, instead of standing up to protect and defend the person who had employed and paid him, turned against his client, and used the information entrusted to him in holding the man up to ridicule and condemnation? He that pulls against his employer is pulling against his own interests. Yet one meets many disloyal assistants, young and old, who are guilty of these habits. They damage trade and scatter seeds of discontent among their fellows, and should be discharged at once. On a par with such is the thief who purloins the names and addresses of all his master's customers, with details of the goods they buy, the prices they pay, etc., in order to carry all these particulars to his next employer. Perhaps it is well that these shallow-brains, in applying for fresh situations, boasting of their possessions, and unfolding their cunning, are generally incapable of noticing the disgust which they arouse in any honourable man to whom they thus betray their perfidious propensities. Unprincipled knaves of their own stamp may employ them for a short time, but they only secure the worst places, where master and man will try to fleece each other. No respectable man wants to obtain business in that way, or will have anything to do with them. Little wonder that employers sometimes seem cautious and uncommunicative with their managers and men.

Ignoble ideas often prevail in regard to other matters. "Why, Roberts, you must have known how Brown was going on neglecting his work and helping himself in various ways—robbing me, in fact." "Yes, sir, I've spoken to him two or three times." "Spoken to him, indeed! Whose assistant are you, Roberts?" "Well, sir, I didn't want to get him into trouble, and it was no business of mine." "But it is business of mine, and I pay you to help me. Suppose I had seen him taking money out of your pocket and never told you! What would you have thought of that? An assistant who shields a rogue is an accomplice, Roberts, and unfaithful to his employer. You will go with him, and your behaviour will go with your character."

Keep Good Hours. — Late and irregular hours, unhealthy amusements, smoking, and tippling, are frequently indulged in to excess, and they soon undermine business capacity. This is painfully evident in large cities, where theatres, music-halls, clubs, billiard rooms, saloon bars, and other resorts abound. The jaded, worn - out, and "seedy" appearances noticeable in metropolitan establishments are more often attributable to above causes than to the shop or office hours. The night's dissipation is attested by a cloud of witnesses next morning. It is one thing to get through the shop work mechanically, and quite another to handle the business with intelligent activity. Natural cheerfulness, vigorous mental ability, and sustained effort are not to be successfully counterfeited by the cadaverous smiles, artificial smartness, or transparent frothiness of those who systematically stay out till the small hours of the morning. The played-out "blase" is moreover a dangerous companion, and worse than useless in a respectable establishment.

Tobacco, Beer, etc. — Avoid smoking, chewing, and liquoring, at all events during business hours. They are never helpful to promotion. The man who struts to business with a pipe, cigarette, or chew of tobacco in his mouth every morning and afternoon, or runs out for "nips" of stimulants, ill befits himself for speak-

ing with ladies or gentlemen. So does the individual whose mouth and fingers are stained, "smoked," or tanned by holding cigarettes. The chance of securing a good position is often lost through an applicant's papers, clothes or breath smelling strongly of tobacco, snuff, beer, or other intoxicants. Needless to add, no business house now-a-days has any use for a drunkard, and the habit is no longer regarded as an amiable excess of good nature.

Choose your Place. — Apprentices and improvers should beware of engaging with slovenly and irregular, or dishonest, employers. It is a common mistake to take any place that offers. Hundreds of youths are spoilt for life by acquiring the rude manners, dishonest practices, and disorderly habits of those above them. Endeavour, therefore, to get thoroughly drilled in a well-regulated shop, where method, system, and honesty prevail, and where business is conducted under the vigilant eye of an energetic man of ability, good judgment, and integrity. Parents and guardians especially should reflect that a youth unconsciously models his own conduct upon that of his employers or superiors. The pay may be smaller, or the premium higher, but the instruction is of higher importance, and the best houses are thus able to make money out of their reputation, in more ways than one. They can always get their hands cheaper, even when it may not be so much for the experience gained, as for the influence of the name when the employe is seeking a higher position afterwards. No one cares to have an assistant who has been long in an ill-kept shop, or where shady practices are known to be carried on. People generally remain what they are made by their education, their company, and their habits, between the ages of 15 and 25.

The *class of trade* a young man attaches himself to is also of vital importance. No one who has been long used to the trade done in low-class, ready-money shops, will be very fit for high-class family—nor even a mixed cash and credit trade. The mechanical position occupied by assistants in some of the limited companies has given them the undignified title of "slot machines," and it must be admitted the limited space under the charge of each individual, the monotonous handing out of certain packet goods from shelf to counter, offers an ambitious young man little opportunity to excel at anything very important. Even his name may scarcely be known to the chiefs of the establishment, who rarely or never speak to him. The hours of the limited companies may be shorter, and the duties lighter and more agreeable to those who want easy lives; but a man learns nothing, and will find it difficult to get back into a high-class family or mixed business, or to acquire any experience likely to help him in a shop of his own.

Activity.—The assistant who knows his trade, and aims at supremacy, will help forward business in every honest way he can, and thus gain both the respect and confidence of his employers. When not engaged in serving customers, he will turn his hand to anything that offers, and will readily do porter's work when necessity requires it. He will never hesitate to sweep the shop, clean the windows, nor grumble to take out a parcel, or work late, in times of emergency. False pride, or mawkishness, in these matters never pays. No one likes a grumbler, and no man worthy of the name will leave such things undone, nor stand about watching his employer do them, without feeling ashamed of himself The more useful an assistant makes himself, the more difficult will it be for the employer to spare him in seasons of slackness. It is contemptible in an assistant, probably without a month's independence in his possession, to be over-particular as to his duties, his hours, his regular meals and his dignities. A frank and open countenance is an almost certain index to a desirable assistant; but

politeness, and a cheerful intuition that can withstand ordinary rebuffs, is also essential.

A lady once went into a shop, and a young man stepped forward with a quiet "Good morning, ma'am; can I attend to you?" Without having the politeness to return his salutation, she said, "No; Mr. B—— will take my order." The youth, instead of turning sulkily away, quietly thanked her, went round the counter, brought the lady a chair, and smiling pleasantly into her face, asked her if she would sit down, that Mr. B—— would be disengaged directly. "You know," she said, "I felt so horribly ashamed, though he was only an assistant, that I would have apologised to him; but I can tell you that he takes my order now, and always shall do, wherever he goes." Among the other essentials of a good counterman are affable and genial manners, a retentive memory of faces, names, and addresses. Ability to recognise customers is a great help to business. Both children and grown-up people appreciate such recognition, and like to be saluted smilingly by name when they enter or leave the shop. The man who, in addition to these qualifications, possesses an intimate knowledge of the goods he has in stock, comprehends their merits, and can be absolutely sincere in commending them, can answer intelligently every question likely to arise, and produces far better results than younger men who have more ambition, energy, and muscle, but who cannot talk agreeably, and who merely run mechanically through the gamut of every-day requisites. He may even be a poor worker and worth very little at anything else, but he will keep his eye on the front door, instinctively sees the requirements of every customer, and, being polite, attentive, patient, and discreet, he is enabled to view things from the standpoint of the customer and is a champion trade winner, by introducing new goods and selling them to the right parties. The worship of bone and muscle ranks too high in some men's minds. There is a rare field for tact and shrewdness behind the grocer's counter, and many a large shop might greatly increase its weekly takings by having a genial and obliging diplomat as a sort of specialist, akin to the draper's "shop-walker." The more you can practise an obliging, sympathetic cheerfulness and patience suited to each customer's whims and fancies, the more your services will be appreciated; but beware of going along too fast and of recommending low-priced and inferior goods. These may be left to sell themselves. Cultivate the habit of doing your shop work neatly and rapidly. Neatness and skill in wrapping may be learnt best by observing how proprietary articles are packeted and wrapped. These being done up in immense quantity, and by numerous operatives, the more perfect methods are usually discovered and adopted. In parcelling, make knots that will not slip when tested. Do not dawdle when you see a customer in a hurry, nor yet throw down the goods or change heedlessly. Pertness or oversmartness is a very common but objectionable habit. On the other hand, instead of an expressionless stare at a customer, in indifferent pose, and talking about what you have in stock, the article should be produced with alacrity. It looks like idleness or carelessness not to help by showing freely the things inquired for. So does chatting with fellow shop-men on social topics while serving a customer, or even at any time during business hours. In taking names, addresses, or other directions, be sure to write them down correctly. Never indulge in practical jokes nor ridicule while at business, nor with customers. In American parlance, "Never monkey with the buzz-saw." Always show customers that you are in earnest and want to please them as far as you can. Even if they go off in a huff, they will reflect that you were respectful, tried your best, and they will come round. Remember, also, that if you offend even an undesirable customer, you

may lose other business through his or her talking against you or your establishment. A reputation for truthfulness is indispensable to permanent and satisfying success. Unscrupulous exaggerators and audacious liars soon betray themselves and disgust customers. The ideal salesman speaks to explain, convince and persuade, and he keeps his final aim constantly in mind. He knows instantly the effect he is producing, and the more favourable it is the better he can talk, because his faculties are encouraged.

It is also true that some men are too ready and fluent of speech; the greatest talkers are often surpassed by those who say little. If a point can be made clear at all it is all the clearer by brevity, and sensible people prefer evidence to eloquence.

A seller should only talk enough to keep the buyer talking, and not interrupt rudely, contradict, or annoy. Salesmen who are good listeners are usually good observers, and consequently they grow intelligent.

One of the best faculties of speech for a salesman, as it is for any person who has to convince others, is that of a short, plain, and pithy illustration. It strikes home. Long-winded stories are tedious, and so are hobbies. The salesman who thinks of the meaning and feels the power of a word when he uses it will naturally speak it earnestly and with the right emphasis. Otherwise he will not emphasise it at all, and it is possible that a sale may hang upon the emphasis given to a few important words.

When strangers enter during the master's absence, don't try to make believe you are he. When commercial travellers call, don't pry into samples prices, terms, etc., and affect to deliberate, when you know you have no authority or right to such information. Equally mischievous is it to answer unasked as to what your employer may or may not be induced to buy. Assistants are often consulted on these points by their employers; but those who take upon themselves too much are usually set back and kept back.

Attend strictly to business when on duty, and avoid confabs with travellers, private friends, and acquaintances. Don't have relatives, friends, or your private tradespeople coming to engage your attention and waste time during working hours. It is unbusinesslike, and an impertinence employers don't like, and few will tolerate. If they come as customers, let someone else serve them if possible. If you want anything for yourself from stock, buy it from the principal or head manager, and in no case take anything without doing so, or it may look very like stealing. Always count the loose money that passes through your hands before passing it to others. Always have a good supply of suitable change; nothing looks more unbusinesslike than keeping a customer waiting while some one is running about for change. Don't let cash customers see you booking goods to others on credit. Never smoke nor encourage smoking in the shop, nor during business hours. Even out of sight in spare moments, it is quite noticeable, and the fumes are often very objectionable to customers entering the shop.

Don't spit about on the floor.

Don't be without your pocket-handkerchief, even if you have an apron on.

Don't have dirty hands, face, ears, or neck, nor finger nails in half-mourning.

Don't be afraid of soap and water, nor of indulging in a bath occasionally. Provision men should always have clean white coats and aprons. In serving customers, don't lick your thumb every time you take up a sheet of paper in which to wrap the butter, sliced bacon, corned beef, or cheese; it looks nasty. In clearing the counter of bits of paper, crumbs, and other fragments, don't sweep them off on to the floor to be trampled under foot, but into a receptacle provided for the purpose.

Restore goods to their proper places as soon after using them as possible.

Goods conveniently placed save time, money, and temper in showing.

If you think you know of an improvement of any kind, suggest it to your employer at once. Keep a note-book in your pocket wherein to enter instanter any points to be remembered and considered at leisure. Keep your eyes and ears open about your competitors, but do not believe all you hear until you have verified it. The right sort of assistant will always keep a watch on his employer's interests in every way—short-weights, counts, or measures of biscuits in tins and boxes, tinned meats, fruits, bags of sugar, flour, seeds, rice, sago, barley, and oatmeal, actual contents of casks of vinegar, syrup, or wine. The "assistant" who waits for "orders" to look well after such things does not know his business.

Ticket Writing, Show Cards, Posters, etc.—A good supply of neat bills and tickets well displayed in the windows and interior of a shop do a useful amount of talking, without making a noise. Those in the window bring in fresh customers from the outside, and while customers are waiting their turn, or for their orders to be entered and parcelled up, or for their change, their eyes are usually wandering about the shop, and, ten to one, some ticket or poster reminds them of another want, or attracts their curiosity to some article they never noticed before. Tickets, uniform in size and colour, and freshly printed by hand, are far more effective than a collection of the miscellaneous show tablets exhibited by numerous other shopkeepers all over the town. To purchase tickets frequently from professional ticket-writers is, of course, expensive, and it is therefore well worth the effort of any fairly educated youth to acquire the knack of making them. The simplest method is first to learn how to make the letters of the alphabet and the figures correctly. Try to copy or imitate exactly the printed letters from magazines or newspapers, and you will be surprised how easily what seems a difficult art may be mastered. If the letters are odd, crude, even bungling, they may attract more attention than were they highly artistic and symmetrical. The one thing to be observed is that they may be read at a glance. They should be bold and simple, and the less ornamentation the better, but a moderate margin is desirable. The tools and materials for ticket writing are few and inexpensive. A few sheets of white tea paper, a camel-hair brush or two, a bottle of liquid blue or black. A very brilliant, glossy paint, for the purpose of ticket writing is often made by grinding up a cake of Indian ink, and mixing it with a thick solution of gum arabic. A good vegetable black (in powder) may be bought at the oil and colour shops, and worked into a thick solution of gum arabic, either with a palette knife on a piece of glass or smooth slab of stone, or with pestle and mortar. Another good cheap ticket ink is made by dissolving two ounces of gum arabic in half a pint of good black or red ink, by means of a hot-water bath. These resist the damp for some time, but soluble glass (water-glass) is even a better addition than the gum. A tube of artists' black oil colour paint answers for waterproof ticket writing. Dissolve 1 oz. gum arabic in 6 oz. water and strain, then add a little powdered drop black, and beat or stir it well up to extreme fineness. For *blue* ink use ultramarine instead of drop black; for *red*, vermilion, lake, or carmine.

(2.) Take four ounces of white wax (clean) and one ounce and a-half of white soap. Melt, and when well amalgamated, add of lampblack half an ounce. Mix well, heat strongly, and add of shellac one ounce. Again heat it, mix it well, cool, and bottle for use. You will find that with this ink lines may be drawn from the finest to the fullest without danger of its spreading; or,

(3.) Mix four parts of glycerine and one part of aniline (any colour).

(4.) Take any common black ink and add to it a fourth of its weight of gum arabic. Heat till dissolved, and then strain.

Rare articles should have their name on the ticket. Well-known goods only need an adjective or two and the writing on one ticket should harmonise with that on another. In fact, it is better for one person to write all the tickets for one week. The tickets should always be spotlessly clean, neat and fresh, as though specially made for *emporary* use. Even if wel chalked out on rough sugar paper, the effect is better than when elaborately drawn in letters of gold, or framed. For provisions, however, the most appropriate tickets are those of enamelled metal or red-painted tin, with strong spikes, because grease very soon spoils the look of card or paper. To show too many tickets is worse than showing too few—they should not be so numerous or so large as to hide the goods. Those who cannot learn to write good tickets, may do well to use the wood block types and rules, sold in boxes containing complete sets by Parnalls (page 9).

The permanently printed and decorated announcements in all the colours of the rainbow, may seem very grand as works of art, but they have an everlasting look which is disinteresting, and are apt to shame the goods. It is poor policy in many ways to cut up or destroy other people's show cards, either for your tickets, or for repairing your shop floor, staircase, ceilings, etc. Conscientious customers frequently notice and despise these practices. A man often thoughtlessly gives himself away and betrays his dishonourable propensities by covering over or removing the legitimate advertisements from expensive show frames, in order to appropriate the latter for announcements or pictures of his own.

Goods in Street or Footpath.—The scavenging of streets and the cleansing of footways and pavements is generally undertaken by the sanitary authorities. It is unlawful to place or leave on any footway any furniture, goods, wares, or merchandise, or any cask, tub, basket, pail, etc.; or to place over any footway any blind, shade, covering, awning, or other projection less than eight feet in height from the ground; or to place any goods, wares, merchandise, matter, or thing whatsoever, so that the same project in such a manner as to obstruct or incommode the passage of any person over or along a footway; or to roll any cask, tub, hoop, or wheel upon any footway, except for the purpose of crossing the footway; or to throw or lay down any materials in any street or beat or shake any carpet, rug, or mat in any street after the hour of eight in the morning.

Excessive Use of Street, or Highway.—It is illegal for any man or company to block or obstruct a public street or highway by excessive usage or too much traffic, such as loading or unloading packages of goods, vans, carts, etc., connected with the business, or by drawing crowds of customers. Any neighbour suffering inconvenience may apply for an injunction to restrain that firm from causing a public nuisance. If a man cannot carry on business in a place without an unreasonable use of the highway, he should obtain premises elsewhere.

Weighing Paper with Sugar.—The following cases seem to show that there is no illegality in weighing the goods in paper, if fairly weighed on the scale in the presence of the customer with the goods, but it must not be folded and placed alone and out of sight, under the scoop:—

The first is a reply received by a Frome tea merchant, who addressed an inquiry to the Lords of the Privy Council for Trade.

"February 24, 1871.

"Sir,—In reply to the questions contained in your letter of the 10th inst., I am directed by the Lords of the Committee of Privy Council for Trade to state that they are not aware of any law which imposes a penalty

on a grocer in Great Britain for selling a pound of sugar including the weight of the wrapper.

"I am, sir, your obedient servant,
"W. R. MALCOLM.

"Mr. J. Milborne, Frome."

In July, 1892, a grocer was convicted by the Wolverhampton Stipendiary of fraud in weighing paper with sugar, raisins, currants, and tea, but on appeal to the Queen's Bench Division, the conviction was quashed, Mr. Justice Mathew and Mr. Justice Bruce holding there was no "fraud," as the practice followed was understood all over the kingdom, and was well-known to both buyer and seller.

A more recent decision (1901) at Northallerton, in Yorkshire, has also attracted considerable attention through its being somewhat contrary. Paper bags might be used more frequently. The bag should, as a rule, be heavy enough to affect the scales, and thus pay for itself. Customers who grumble at seeing a sheet of paper on the scale will accept the bag with pleasure. It is also less trouble, and not so old-fashioned.

Character Giving.—A master cannot be compelled to give a character to a servant who has been in his employ, nor indeed to answer any inquiries on the subject, but if he does give a character, it must be a true one. If he gives a good character to a bad servant, he may be held responsible; also if he gives a bad character to a good servant and express malice can be proved. Under ordinary circumstances a character is considered a privileged communication. Some employers, on being asked for a character, reply:—"I do not give written characters, but you may refer anyone to me, and I will do my best for you."

The objections to written characters are:—

1. They may be used by others who have no right to them.

2. Past transactions may come to light, rendering a good character untrue.

3. The rightful owner may afterwards misbehave himself, even be sent to prison, and on regaining his liberty, still use the good character.

4. Sometimes an unprincipled servant, having secured a good written character from his late employer, will turn round and do him much injury, by divulging all he knows of his business and private affairs, rob him of his customers, and otherwise act defiantly.

Personal interviews or special inquiries between employers as to characters are probably the best for all parties, care being taken to identify the servant in question, so as to guard against impersonations.

Apprentices.—It is much to be regretted that the apprenticeship system has gone so much out of fashion. Probably not half of those in the trade to-day ever saw an indenture. Youths and their masters have small interest in each other, and changes are so frequent that few masters will trouble to give any particular instruction. There are, however, many single-shop grocers who really have learnt their trade thoroughly, and these would certainly benefit by making known their willingness to take apprentices. Many parents anxious for their children's welfare, would be very glad to pay the necessary premium to those able and ready personally to teach. The premium should be high enough to secure the full term of service. If apprenticeships could be revived, and boys allowed off early two or three nights a week to attend evening classes, where they might pursue studies specially adapted to their vocation, it would be much more hopeful for all concerned. As things are, no matter how aspiring a youth may be, he rarely receives any proper training, and, instead of satisfying any ambition he may have, the chances are he will have to remain a poor hand.

Apprenticeship — Form of Indenture.—This indenture witnesseth that A. B., the son of W. B., of doth hereby put himself apprentice to

R. W., Grocer, of , from the date hereof until the end of years. And the said R. W., in consideration of the sum of paid to him by the said A. B., covenants to instruct the said A. B. in the business aforesaid, and [if an indoor apprentice] find him sufficient meat, drink, and lodging during the said term [or, if an outdoor apprentice, and wages to be paid, here set forth the amounts arranged for].

[It is sometimes usual for the father of the apprentice here to covenant for the provision of clothes and medical attendance.] (Here follow signatures and date, and a County Court Judge has held that a seal is also necessary.)

Assignment of Apprenticeship. — Memorandum of agreement made this day of between (1st master), of the first part, (new master), of the second part, and (apprentice), of the third part.—Whereas by indenture dated , the said (apprentice) did put himself apprentice to the said (1st master), and the apprenticeship thus commenced has been continued up to this date. Now, therefore, the said (1st master) doth hereby assign the said indenture and apprentice to the said (2nd master) for the remainder of the term reserved in the said indenture; the said (2nd master)) agrees to take the said (apprentice) as his apprentice for the remainder of the said term, subject to all the covenants of the said indenture; and the said (apprentice) agrees to serve the said (2nd master) as an apprentice to the end of the said term, subject to all the covenants as aforesaid.

(Here follow the signatures.)

Although it is not requisite to make use of any special form of words in an apprenticeship indenture, yet printed forms for the purpose are obtainable from Somerset House through all stamp distributors, and if indentures are made on unstamped paper, they must be stamped within thirty days. No lawyer is necessary. The cost of the stamp is 2s. 6d., whether there is any premium or not, except in Ireland, where if the premium does not exceed £10 there is no need of a stamp, nor is a stamp required in the case of children apprenticed at the sole charge of any parish or public charity. The longest period for which an apprenticeship can be legally enforced is seven years, and, of course, no one could be compelled to serve after coming of age, even if the term of apprenticeship was still unexpired. There are many obligations incurred by an employer on receiving an apprentice, but these are by no means onerous or unreasonable. Among the obvious requirements are that the master shall find his apprentice suitable food and lodging, and, in case of illness, procure him medical attendance and care, unless otherwise agreed in writing. He is also bound to teach his apprentice, or cause him to be taught, the trade specified in the indenture. This is a point parents should be careful about, for there are not now so many grocers able to teach the trade properly. As regards the apprentice, he is, of course, under obligation to obey his master's orders in all things, except they should be absolutely unlawful or unreasonable. An apprentice does not come under the exceptions mentioned in the Shop Hours Act, and he can refuse to work on Sundays, or to such length of time as will deprive him of requisite rest; nor can he be compelled to serve his master in respect of work outside his trade. Apprenticeship cannot be cancelled on account of illness, misconduct, or disobedience; but, irrespective of death, which naturally puts an end to all contracts, bankruptcy on the part of the master releases the apprentice from his obligations, while, if a transfer is desired, it is imperative that the consent of all parties to the indentures be obtained thereto in writing and duly signed.

Casks. — F. *Tonneau, Baril, Fut, Futaille*; Ger. *Tass*; Port. *Barril*;

W. Baril, Barilan.— The word "cask" is a collective term, including barrel, butt, hogshead, pipe, tierce, etc. Those of small size are known as cades, cags, or kegs. Casks intended for liquids are called *wet* or *tight* casks; those for soda, powders, flour, sugar, cement, and other dry goods, *dry* or *slack* casks; and those for butter, gunpowder, etc., are called semi-tight casks.

The thickest part of a cask is called *the bouge, bulge,* or *bilge*; the ends are called *the heads;* half-way between the bulge and the head is called *the quarter*; the timbers forming the sides are called *the staves,* and the ends of the staves which overlap the heads are called *the chime.*

The hoops for dry casks are usually made of wood, while those for wet casks are made of iron, and often both kinds of hoops are used for valuable liquids.

The large round hole in the bulge is called *the bung-hole,* and the boards forming the heads are generally pinned together by small pegs called *dowels.*

The square plate of tin tacked on a cask over the bung or tap-hole plug is to prevent these stoppers shaking out accidentally.

Wooden bungs are usually "started" or removed by thrashing the cask close to the bung-hole, first striking on one side and then on the other side of the hole with a wooden bat or thrasher, not unlike a double-edged axe. This method, however, has no effect on cork bungs, which have to be drawn by iron instruments.

Casks are entirely of European invention, although now adopted in all parts of the world, but were used much more by our forefathers than at the present day. It used to be a common cry in the streets of cities and large towns, "Any work for the cooper to-day?" Casks are of all sizes from 3 to 252 gallons; all beyond this size are termed *backs.* (See also *Vats*).

A cask of almonds is 3 cwts.; black lead, 11¼ cwts.; bristles, 10 cwts.; cloves, etc., 300 lbs.; pilchards, 50 gallons; a cask (or barrel) of petroleum, 42 Winchester gallons, and a cask of beer may be 4½, 9, 18, or 36 gallons.

A *bulged cask* is a cask swelling out in the middle.

A *splayed cask* is a cask having a flaring or conical form.

The amount of wood surface exposed to a liquid is very much larger in small casks than in large ones.

How to Age Casks.—Dissolve 5 ozs. of iron sulphate and 1 lb. of sulphuric acid in a gallon of water, and apply on the outside only.

Casks last longest when stored in a dry place, or one uniformly moist; variations rot them. As soon as emptied casks should be bunged quite tight, and any slack hoops should be driven up tight so as to prevent mustiness from the admission of air.

If not wanted, mix 1 part of bisulphite of lime in 4 parts of water, and put about a pint of this mixture in each empty cask. (This will keep it sweet) in a cellar for 12 months.)

The best way of stacking empty casks is with their heads outwards and bung-holes down.

Cask-making machinery is a recent invention, and all kinds can undoubtedly be turned out by it more economically than by hand. The chief obstacle of its more extensive adoption has hitherto been the hostile attitude of coopers, but there is little doubt that before long hand-made casks will be things of the past.

How to Sweeten Casks.— New casks are usually seasoned by soaking them a day or two in a solution containing about 1 lb. of salt and ½ lb. of soda to the barrel; after emptying this out the casks are filled with cold water for an hour or two, and finally scalded out or steamed.

Coopers often boil the staves for gin casks in a strong lye of alum to prevent them colouring the spirit, but washing them with oil of vitriol is best.

The curing of mouldy or stinking casks depends on the extent of the evil:—

1. Sometimes an exposure of the unheaded cask to the weather for a

few days is sufficient. If not wanted immediately, let it stand head out in the open air for a month; there is no greater purifier.

2. If slightly tainted, or mouldy, they may easily be cleaned by scrubbing with lime and water, or sulphuric acid and water (strength 1.854 specific gravity), and then rinsed with boiling water.

3. Put a few pounds unslaked lime in the cask, add water, and cover. In a short time add more water and roll the cask. Finally rinse with clean water.

4. If the evil be more pronounced, half fill the cask with warm water, add about 1 lb. chloride of lime, and wash out well, finally rinsing with cold water to which a little sulphuric acid (oil of vitriol) has been added, and finally rinse with clean water.

5. Smoke them out with sulphur, or with sulphur mixed with a little saltpetre.

6. Mix half-a-pint of vitriol with a quart of water, pour it into the barrel, put in the bung, and roll it about. After twenty-four hours add 1 lb. of powdered chalk, and roll it again. Bung it down firmly for a few days, and then rinse well with hot water, and let it air thoroughly.

7. Dip a linen cloth in melted brimstone, set it on fire, put it into the cask at the bung-hole, and drive in the bung so as to leave a corner of the cloth hanging outside; in two or three hours or so open the bung-hole and pull out the cloth.

8. Blow live steam into them, and afterwards wash round with a solution of bisulphite of lime.

9. Remove the heads, and char the insides of the staves by the aid of a fire of shavings.

10. Ale or wine casks are easily cleaned with boiling water containing a little potash and lime.

11. Brewers unhead their vats sometimes, and whitewash them with fresh milk of lime.

12. If very bad, the cask must be undone and the staves shaved.

13. When incurable the cask must be used for some other purpose, or entirely broken up.

It seems remarkable that there is no system of marking casks guaranteeing that they are really of the capacity supposed. Small measures have to be stamped, under heavy penalties, but the larger measures, such as casks for beer, vinegar, etc., are under no inspection. It is well known that even if correct when new, the repeated repairs, tightening-up, and shrinkage which they undergo, soon makes a difference of a gallon in a cask.

Brewers and others must, in the aggregate, gain much from this shrinkage, and perhaps the readiest defence to it is for the grocer to *weigh* each cask as it arrives, enter the gross weights on the invoice, and then weigh each cask when emptied. Ales and vinegars average 9 lbs. to the gallon, but it is easy to draw a gallon of any liquid, weigh it, and so check the contents.

The law expects a tradesman to know his business and protect himself in this and other matters.

Brass Polishing.—(1) Rub over it tripoli, brick dust, or rotten-stone with sweet oil, and polish with leather.

(2) Two pennyworth of oxalic acid mixed with water, rub on, and then polish; but to avoid risk of poisoning either children or careless persons, brass articles and copper utensils may be equally well cleaned and polished by washing them with a solution of salt and vinegar. Use as much salt as the vinegar will dissolve and rub with a woollen rag, and finally polish with powdered chalk.

(3) Roche alum boiled in water.

(4) Sulphuric or hydrochloric acid will also effect a ready polish, but this soon tarnishes again.

(5) Finely rubbed bichromate of potash mixed with twice its bulk of sulphuric acid and an equal quantity of water.

(6) Two parts of soft soap mixed with four parts of very finely powdered rotten-stone.

(7) Eight parts of fine rotten-stone powder, two parts of oxalic acid, powdered, and turpentine sufficient to make them into a paste.

(8) Take a piece of flannel and damp it with paraffin oil. Dust it well over with fine bath brick. Rub the brass with this, and clean off with a piece of cotton waste, finishing with a second piece, which should be clean and dry.

(9) A great saving in time and trouble will, however, be effected by using one of the new and excellent Metal Polishes.

Glass-Stoppered Bottles.—In closing these the glass stopper should never be pushed in too tight, nor turned round when in the bottle, for the stoppers are very liable to become fixed and immovable if put in carelessly.

When this difficulty occurs, heat, either of the hand, fire, or warm water, may be tried on the neck of the bottle (not on the stopper), and, if not successful, a little olive oil must be applied with a feather, and then placed about half-a-yard from the fire. When the outside of the bottle neck is warm the stopper should be gently tapped on all sides upwards with a piece of wood, and attempts then made with the hands to move it. If still fast more oil should be employed, and the process repeated. Sometimes it may be sufficient to tap the stopper sharply on each side without heat, or, if this fails, the bottle neck may be dipped in warm water or a warm cloth be wrapped round it for a couple of minutes.

A good plan is to allow a thin stream of hot water to run over the neck of the bottle, for instance, from the kitchen boiler, or an exhaust steam pipe, rapidly and gently tapping the bottle meanwhile. The necessary heat may also be obtained by friction thus:—Pass a strip of woollen cloth or thick twine twice round the neck of the vessel and see-saw it backwards and forwards; the heat causes the neck of the bottle to expand, so that the cold stopper becomes loose, and a few slight taps usually suffice. Broken stoppers may also be loosened in this way, and extracted by the aid of a stick of sealing-wax warmed at one end. (On this principle of expansion by heat a tight screw may be withdrawn from a metal socket with a cloth dipped in boiling water.)

Bottle Washing.—(Refer also to *Bottled Ales and Stout.*—Bottles which are greasy, cracked, or starred are usually not worth washing, but a cheap stock lye for cleaning greasy ones is made as follows:—Boil 1 lb. each of soda and quicklime in one gallon of water. A quarter of a pint of this stock well shaken with a few gravel stones will cleanse the dirtiest of bottles. A handful of shot or small pebbles, shaken well in half a bottleful of water with a little soda in will generally displace any solid matter. Sometimes scalding or scouring in a strong solution of soda is required, or to remove the odours it may be necessary to employ either a solution of permanganate of potash and diluted sulphuric acid or hydrochloric acid for the purpose. Be sure no old corks are left inside. The easiest way to purify bottles is to wash them with powdered charcoal. When perfectly cleansed they should be rinsed out with clean cold water and turned upside down till dry, and finally stood upright, neck upwards, near a fire, so that all steam may escape.

Particular care should always be taken in cleansing bottles, either inside or out, not to fill them till clear and perfectly dry. A rapid and simple method of drying bottles before filling them with powders, oils, etc., is to introduce an ounce or so of white mustard seed, and rotate briskly.

Jars and Pickle bottles that smell of onions may be made quite sweet if filled with garden mould and left standing out of doors two or three days; when thoroughly washed, they will be found quite sweet, and may be used for jam or any other purpose.

Rubber Stamps, Inks, Cements. Inks for rubber stamps should contain nothing liable to injure the rubber. They should not dry too rapidly upon the pad or cushion, yet they should be capable of being rapidly absorbed by the paper, and without blurring.

(1) A penny packet of aniline violet dye mixed with a teaspoonful of glycerine, and then added to half a gill of boiling water.

(2) Dissolve 16 parts of fast aniline colours—blue, red, or any other desired—in 80 parts of boiling water, then stir in well 7 parts of glycerine and 3 parts of syrup.

(3) Take 2 ozs. aniline colour, 2 ozs. methylated spirit, 1½ oz. glycerine, 1 oz. gum mucilage, 6 ozs. treacle, and boiling water to make up 16 fluid ounces. Then place the aniline in an evaporating dish with the treacle, glycerine, and about 6 ozs. of the water. Apply heat, and stir till dissolved, then add the mucilage (say 3 drachms of gum arabic, melted in 5 drachms of water), the spirit, and lastly the remainder of the boiling water.

(4) Take 2 drachms of aniline violet (or any other soluble aniline colour), 5 drachms of glycerine, 1 oz. of methylated spirit, 6 drachms of gum acacia, and 4 ozs. of water. Dissolve, and shake well. (For blue-black or green inks, use double the amount of aniline colour.)

(5) A patentee makes an ink as follows:—Four fluid ounces of castor oil are mixed with one fluid ounce each of carbolic acid and oil of cassia, and 1 oz. of ethyl violet or other aniline dye dissolved therein. The solution takes place cold, but may be aided by stirring and heating, and these proportions may be varied according to the purpose in view.

How to Clean Rubber Stamps.—Take a soft brush, and lukewarm water with a little soap, brush lightly, and when clean rinse with cold clean water, finally drying carefully with a clean soft cloth. *A good cement for rubber and metal* is pulverised shellac dissolved in ten times its weight of pure ammonia. In three days the mixture will be of the required consistency. The ammonia penetrates the rubber, and enables the shellac to take a firm hold, but as it all evaporates in time the rubber is immovably fastened to the metal, and neither gas nor water will remove it.

Stencils. Stencil Ink. Stencil-Plates. Stencilling. (See also *Scribe*, p. 833.)—A stencil plate is a thin sheet of metal, leather, cardboard, or paper, in which letters, figures, words, ornaments, trade marks or other devices are cut out, either with a knife, chisel, or other instrument.

The letters, etc., are so cut that the stencil-plate will not fall into disorder, thin strips being left uncut, or a sort of dotted line being made so as to hold the pattern or plate together.

In use, the plate is laid flat upon the wood, paper, textile, wall, or whatever is to be marked, and a brush, very sparingly charged with ink or colour, is then rubbed over the outer surface of the plate, which latter must be held firmly down by the hand during the operation.

On removing the plate, the marks should appear plain and legible on the surface intended to receive them, as if printed by blocks.

The most suitable ink for stencilling is the sediment to be found at the bottom of ink bottles, storing barrels, etc., at ink factories.

Packing cases, boxes, sacks, bales, books, and linen are commonly marked in this way; and so are the elaborate patterns on wall-papers, oil cloths, linoleum, embroidery patterns, etc.

In stencilling, the novice must take especial care (1) to keep the back or underside of the plate dry and free from ink; (2) to keep the plate pressed firmly to the object to be marked; and (3) to have the brush only very slightly damped, not wet, or the ink will run under the edges and result in a blurred mark. It is best to practise a few times on waste material be-

fore essaying on goods which want marking. If the stencil be thin and delicate, the brush employed should be large and soft, giving readily to the slightest pressure, or the frail stencil will soon be torn to pieces.

It may be remarked that the perforations around postage stamps, for the invention (?) of which the British Government offered and paid £4,000 in 1852, is merely stencilwork, well known to and excelled in by the Japanese for many centuries. In fact, a Japanese stencil, dated in Japanese characters 1825, shows squares exactly same size as our postage stamps, and punctured with the same kind of pinholes.

Gas Notes.—Most people imagine that gas of the Parliamentary standard of "sixteen candles" ought to be as efficient in lighting a room as sixteen separate candles. But a wide difference exists between illuminating value and illuminating effect. The words sixteen candle-power merely mean that a certain light, at four times the distance, exerts upon a photometer screen (of greased paper) precisely the same illuminating power as the standard candle.

The subject of burners is an important matter, and it is seldom that proper attention is paid to their selection. A burner should not only be a good one in the ordinary sense, but it should also be adapted to the quality of the gas, otherwise there will be both waste and disappointment.

In the Gas Referees' report on the subject of "burners," they intimated that fully *one-fourth* of the gas supplied to London is wasted from the cause just mentioned.

The important points are:—

The burner should not be wholly made of iron, because however brilliant a light it may give at first, it will soon corrode.

One of the best burners, the "fish-tail," has the body made of brass, while the top of it, from which the light issues, is made of steatite, or porcelain composition. This material is uncorrodable.

It is called the fish-tail because of the shape of the flame, which issues through two apertures inclined at such an angle that the two currents of gas impinge against each other and spread out laterally, giving a flame at right angles to the point of exit.

The "batwing" burner, which also derives its name from the peculiar shape of its flame, delivers the gas through a slit at the top of the burner. These give a more brilliant light than the fish-tail, but go out of order sooner.

With all burners, after a certain period of perfect burning, which may extend to several hundred hours, a time is sure to arrive when the burner commences to smoke and form deposits inside the holes or slit, and the best plan is then to take it out and put in a fresh one.

Space forbids technical details as to the different qualities of gas, and the most suitable burner for them, but the consumer will probably do best to buy his burners from his gas company, who understand both, and whose interest it is to sell the burner best suited to their make of gas. To buy burners from pedlars is generally a mistake.

As to the various *Gas Governors* patent and otherwise, we know of nothing better than having a long key to the gas tap at meter, and turning this exactly so far as to allow just sufficient gas to enter the meter as best meets ordinary requirements.

Incandescent Gas Lights. — These burners and mantles are now everywhere used where good lights and economy are considered. The outlay is very small, and the saving in gas is certainly more than 50 per cent.

Frozen Gas Meters. — This may generally be prevented by pouring into the water which is in the meter two or three tablespoonfuls either of methylated spirit, or, indeed, any spirit handy, or magnesium chloride

solution, or simplest of all, about ½ oz. glycerine to each gallon of water.

A method which may be useful for thawing frozen pipes is pointed out by a German chemist, who suggests that unslaked lime should be placed round the pipe, covered with straw, and then water poured over it, the heat generated by the slaking being sufficient to thaw the frozen pipe.

If the water in meter be frozen it is safest to thaw it with hot water or hot sand bags.

A roaring or hissing sound is a sign of too much pressure, and the main tap should then be partly turned off.

Always keep a plan of your gas-pipes and burners. Keep bell-wires away from gas-pipes. Don't use a naked light near the meter. Never stay long nor sleep in a room where there is even a faint odour of gas.

If a light bobs up and down, or flickers, it is a sign of *water lodging* somewhere in the pipe, and this must be let out.

If lights go out suddenly, it is a sign of air or water in the pipes, or a frozen meter.

If the flames are faint and weak they are a sign that the main tap is not full enough on, or that the pipe is somewhere too small, or the flow of gas impeded, or that there are too many lights burning.

Never keep a gas flame turned down low in a bed room; the air will become vitiated owing to imperfect combustion.

Siphons (*F. Chante-pleur*). — The siphon is a bent tube, very useful to all dealers in liquids, saving much labour and waste in drawing off a liquid from one vessel into another.

The simplest kind is a pipe, bent to form the letter V, only with one arm shorter than the other. It may then be filled with water or other liquid, and both ends covered to keep it from running out. Then, if the short arm be inserted into a bucket full of water or other liquid standing on a chair, and the longer arm be placed in an empty bucket standing on the floor, the covers at each end of the siphon may be removed (the short end first), and all the water will immediately begin to run through the siphon from the full bucket to the empty one.

Care must be taken that the end of the short arm be not taken out of the water in removing the plug or covering, and that the full bucket stands higher than the empty one, the flow depending on the distance of the liquids from the bend of the siphon. A siphon is a very useful instrument for drawing off wine, vinegar, oil, etc., without disturbing the sediment, also for emptying vessels awkward to move. A piece of air-tight indiarubber tubing, or a piece of sound gas pipe, may be easily bent and experimented with.

Of course, siphons of various sizes and descriptions are made. Many have a stop cock fixed near the end of the long arm, so as to turn on when ready or when desired, without removing the siphon; and sometimes a small exhausting tube is attached to the longer arm, near the cock, to allow the air in the siphon to be sucked out after the short arm unstopped has been inserted in the liquid. It may be added that water will not rise higher than 34 feet, and other liquids according to their respective specific gravities.

Spigot and **Faucet**.—These form a sort of wooden tap, often used by grocers for vinegar casks, etc. A *faucet* is a small funnel-shaped pipe, with cork-wood combination, for insertion into the hole at bottom of a large earthenware jar, or in the tap hole of a cask, whence the liquid may be drawn off, and a *spigot* is the wooden key, peg, or plug fitting into the faucet to stop it.

Spiles or **Vent Pegs**.—(See also *Bungs, Corks, Shives*, etc.) are names for the small wooden pegs, about 2 inches long, about as wide as a three-penny-bit at one end, and tapering to

a fine point for insertion in the vent-hole of liquor casks to regulate the escape of gases.

Flagon (F. *Flacon*; Ir. *Clagun*) —A kind of wide stumpy bottle with a narrow neck, and not unlike a small carboy.

Flagons are mostly made of either glass or earthenware, and of various sizes. Largely used for Australian and Canary wines, and sometimes for beer.

Carboy (F. *Tourie*). — A sort of large flagon or demijohn. A large globular bottle of thick, greenish glass, protected by an outside covering consisting either of basket or iron-work. Usual capacity 8 to 12 gallons.

Chiefly employed in holding acids, such as vitriol or sulphuric and acetic acids, also other corrosive fluids likely to act chemically on stone, iron, or wood ware.

Demijohn (*F. Dame Jean*).—A large round glass bottle with small neck and bulging body, holding about two gallons. To prevent fracture it is usually covered with basket or wicker work, and occasionally fixed in a wooden box with a hole, out of which the neck projects.

A larger vessel holding 8 to 12 gallons is called a carboy, and is generally preferred for holding acids.

Cornets and Cups—"Cornet" is the name of a little cap of paper, twisted at the end, in which shop-keepers enclose small portions of goods.

"Cup" is the name of the larger cone used for wrapping sugar. An expert hand makes four or five quires of these in five minutes.

Misuse of Terms.—The following terms are often sadly misused, and their properties misunderstood:—

It should be remembered that:—

Decoctions are always *boiled*, soon spoil if kept, and should be only prepared when wanted.

Infusions are solutions of vegetable or animal matter in hot water, without boiling, and generally kept covered for some time, as with tea, coffee, etc.

Percolation is the process of filtration.

To Percolate.—To pass or strain through a porous mass.

Saturation is the condition of holding in solution all of a solid capable of being contained.

Solutions consist chiefly of soluble substances, which are kept in pharmacies, ready diluted to a certain strength, so as to be ready when required.

Tinctures are spirituous solutions of the active medicinal properties of various substances, which are more conveniently kept in this form. They should be kept in close glass-stoppered vessels, in order to prevent evaporation, by which their relative strengths would be greatly increased. They should also be occasionally shaken, to ensure uniformity. In the case of laudanum and paregoric, serious and even fatal accidents have occurred from neglect of these precautions.

Levigation. — The act of rubbing down to a powder in water, as distinguished from *Trituration* or the dry method of powdering.

Maceration.—The act of soaking a substance in cold water.

Friable. — Easily crumbled or broken into powder, opposed to tough or tenacious, as *friable cheese*.

Elixir is the name applied to compound tinctures.

Emulsion is an admixture of oil and water, by the addition of some other agent which combines them. (See also *Essences*, *Extracts*, etc.).

Staple Articles.—"Staple" is a very old word, originally meaning *pile*, or *heap*, hence a settled public market, or emporium, where commodities were allowed to be sold. Wholesale merchants used to be called *merchants of the staple*, but the word is now only retained in *woolstaples*.

"Staple" articles now mean the greatest and most important products raised or marketed in a given town, district, or country.

Flax, Hemp, Jute and Tow.—*Flax* is a plant of the genus *Linum*, consisting of a single slender stalk, the skin or "harl" of which is used for making thread, linen, cambric, lawn, lace, etc. The skin is composed of fibres so fine and strong that they may be separated so as to be spun into threads fine as silk.

It grows equally well in very warm and in far colder climates.

We import about 100,000 tons of flax and tow yearly, most of it from Russia. A quantity is also grown in Ireland.

Hemp is a stronger fibrous plant, of the genus *Cannabis* whose skin, or bark, is combed into filaments, and used for making into cloth and cordage. canvas for casks, sails, and ropes. (See *Sisal Grass*).

Jute is a substance resembling hemp, being the fibre of the *Corchorus olitorius*, used for making the lowest class of textiles, such as gummy cloth, sacking, and wrappers, and also in the manufacture of mats, coarse carpets, cheap oil-cloth, etc. It was first manufactured for above purposes at Abingdon, then at Dundee and Arbroath. The industry has now extended to Dunkirk and Calcutta.

Tow, or *Codilla of Flax*, is the coarser and broken parts, or fibrous refuse, combed out of flax and hemp, and is not so strong. It is used for making cheap sacking, common twines, also for caulking or filling up the seams of ships, and in cleaning and oiling machinery.

Junk.—Used for mat making and similar purposes, consists of the outer coarse fibre of the coco or coker nuts.

Oakum.—This consists of tangled hemp or tow, and is mostly manufactured by prisoners in our gaols, who are employed in untwisting and in pulling to pieces old ropes, cables, etc., finally disentangling, separating and teasing the fibre, which is then called *oakum*, and sold in bundles to shipbuilders, store dealers, etc., for the caulking of crevices between ship planks, wooden landing stages, and for stopping leaks. It is also placed round the bolts in ships, etc., to prevent the water from penetrating.

White Oakum is that made from untarred ropes.

Chinese Tea is grown in the great interior regions of that country. The crops are bought as they stand by Chinese brokers who travel among the plantations. The tea is then freighted by caravan and "sampan" to the coast ports, where the exporters make their purchases. The brokers have to carry about with them a large quantity of bullion, necessary wherewith to carry on their operations, and this is usually obtained from the banks by way of loan.

Grinding and Mixing. — The sightliness of any ground material depends on the apparent evenness of the size of the grains which compose it. Perfect evenness in this regard is not to be obtained by any sort of reduction process, though good results are obtained from mills which control the discharge of the product by sieves. This very sifting process, however, tends to separate the finer parts of the finished goods from the coarser, as the former drops through the sieve more readily. And it is found that a great improvement is effected in any ground substance by mixing it—just mixing it with itself, so that any noticeably small pieces, or large pieces, are not collected by themselves, but are mingled uniformly through the whole batch.

It is surprising how differently a lot of ground coffee looks, for instance, after being run by itself through a good mixing machine. All the unevenness seems to disappear, if it was well ground to begin with. A good mixing improves a poor grinding as much in proportion as it does a good grinding; and a half-mixing, by

the vigorous use of a hand scoop, will give some improvement in either case. But the best results come, of course, by turning out from the mill the most even product possible, and then treating this in a perfect mixing machine. Goods so handled do not look like ordinary ground goods. They have uniformity and finish; and, if anyone doubts this, he need only make a practical test on ground coffee or spices in a good mixing apparatus.

As already stated, the best and handiest mills and machines are sold by Parnall and Sons, Limited, Narrow Wine Street, Bristol, and Wm. Gardner and Sons, engineers, Gloucester.

The Trading Stamp System Explained. This is a scheme whereby a retailer offers his customers about 5 per cent., not in cash, but in the shape of a valuable present, for every £5 worth of goods bought at his shop for ready money. The shopkeeper buys stamps (small coupons or tickets, the shape of postage stamps) at about 2s. 6d. a hundred from a company (American). Along with these stamps the shopkeeper receives several books, in each page of which are marked out several blank squares. The shopkeeper gives a book to each of his customers, and undertakes when they buy goods at his shop to give one stamp for every 6d. or 1s. spent with him. The customer sticks each stamp, as he gets it, in his book, and when every blank square is filled, he may go to the American Company's office and choose for himself a "present" of the kind given away by the present-giving tea-shops, and of the supposed value. The American Company gets the retailer fast under the following agreement:—"An agreement made by and between the city party of the first part, and of the city party of the second part. Witnesseth that the said party of the first part, for the consideration hereinafter mentioned, agrees with the party of the second part to perform in a faithful manner and within a reasonable time the following: To print in the directory, the name, business, and address of the party of the second part. To deliver at the homes of people in the city as many copies of said books as in the judgment of said party of the first part may be necessary, soliciting their trade, and to instruct and explain to them how they are to use the same. And the party of the second part agrees with the party of the first part in consideration of the foregoing agreements to receive from the party of the first part a sufficient amount of trading stamps to supply all persons who may call for them. The stamps to be given out as follows: One stamp to be given for each and every fourpence represented in a purchase, three stamps for one shilling, etc., the stamps to be given when the purchases are paid for, provided bills do not run over ten days, in which case party of the second part can at his option refuse to give stamps. To pay party of the first part two shillings per hundred for all stamps thus used. To make weekly settlements for each page of stamps used or given out. To cooperate in every way possible with party of the first part to promote the best interests of all the shopkeepers named in the book. To display conspicuously in the shop front window of the party of the second part, and in two other conspicuous places in and around the shop, signs, "We Give Trading Stamps," which said signs will be furnished by the party of the first part free of charge to the party of the second part. It is expressly understood and agreed that said stamps shall remain the property of party of the first part until paid for. The said party of the second part also agrees not to use trading stamps issued by any other person, corporation, or association during the term of this contract. The parties of the first and second part mutually agree that this agreement shall remain in force for one year." There is a limitation to the number of traders who may take up the scheme—for instance, so many traders in one street and so many in another, but there being several companies in competition with each other, this

limitation is of little value to the tradesman. Theoretically the plan promises much, but not many men of high standing have tried it, and, in practice, it has appeared to have bad results, for it has been condemned wherever we have heard of its introduction. The American Companies seem to benefit instead of either the retailer or the customer. If a man wants to give his customers a dividend, bonus, or other allowance when they shall have spent £5, £10, or £20 with him, let him give his own stamps straight to the customers. Then whatever portion customers forfeit will be his gain and not that of outsiders.

The Hire-Purchase System.—Both wholesalers and retailers should be warned of the prevalency of this system, for not only are private houses furnished, but retail shops are also often fitted up with counters, machines, scales, and trade utensils in same way, and the mere fact of a debtor occupying a stylish house or shop too often proves valueless to those who have given credit. Hire-purchase agreements should as a rule be avoided, on the ground that their terms are invariably in favour of the vendor. The main feature of these arrangements is that the moment the purchaser falls in arrear with his instalments the vendor may come in and seize the property which is the subject of the agreement. If the parties have so agreed, the Courts will not interfere, even though all the instalments but one have been paid, and the last one has been tendered shortly after it was overdue. The price agreed upon also is always considerably more than the cash price.

Until quite recently vendors under hire-purchase agreements were accustomed to follow and reclaim the goods when they had been disposed of by the purchaser before paying his final instalment. But when the question came before the Court of Appeal in 1893, it was decided that a *bonâ-fide* purchaser of goods under such circumstances could not be compelled to deliver up the goods to the person who had let them out under the hire-system, provided, of course, that at the time he bought them, he had no knowledge of the existence of any hire-purchase agreement in respect of them.

Truck System.—A name given to the practice which used to prevail, particularly in mining and manufacturing districts, of paying workmen's wages in goods instead of money, the masters often keeping a shop or warehouse for the purpose. There are many advantages and many disadvantages of the system, but it was regarded as a kind of thraldom, and abolished in the reign of William IV. (See "Truck Act," near end of book.)

Tontine System—A system among workmen of raising money for granting life annuities to a number of persons with benefit of survivorship as the lives fall in.

In other words, a number of persons pay down a certain sum of money, and in return all of them are granted an annuity for life, with the advantage that as each one of their number dies, his share will be equally divided among the rest, until at last a single survivor becomes entitled to the whole.

Lotteries—By an Act of Parliament passed in 1698, because "severall evill disposed persons" had "fraudulently gott to themselves great sums of money from the children and servants of severall gentlemen, traders, and merchants, and from other unwary persons, to the uttere ruine and impoverishment of many families and reproch of the English laws and Government," it is made punishable with a fine of £500 for any person to exercise or open a lottery. Lotteries are declared to be public nuisances, and any person who plays, throws, or draws at any device of the kind is liable to a penalty of £20. Since the passing of the Act, art union lotteries, duly constituted, have been exempted from its operation. The most recent

forms of lotteries which have been held to be illegal, are those known as the "Missing Word Competition" and the "Bond system" of selling tea.

Foreign Lotteries. — Almost every trader whose name figures in the directories is frequently receiving lottery advertisements, and invitations to buy "whole," "half," or "quarter tickets." The best place for them is the fire or waste-paper basket. The tickets, or chances, are not worth a tithe of the prices charged, but many Continental nations are not above making profit out of them.

In the centre of the public hall where the drawings take place, two large wheels are erected. In one of these wheels are placed the numbers of the tickets written on paper, rolled up, and enclosed, each one separately, in a small tin box, and in the other wheel are placed the prizes (which, in accordance with the official regulations are allotted to each respective class), likewise written on paper, rolled up, and enshrined in a small tin box, as in the case of the tickets. After they have been well mixed, a number is drawn from one wheel and a prize from the other, and handed to two officials of the administration, who read out aloud the number and the prize drawn. Both the papers (ticket and prize) are re-examined in the presence of the committee entrusted with the drawing, and entered in the books. This process is continued until there are no more prizes in the wheel. As soon as the last prize is drawn, the Government notaries, who have superintended the whole of the proceedings, put the State Seal to the wheel containing the remainder of the tickets for the future drawings at the dates stated in the prospectus. For the next drawing the new prizes are again placed in the second wheel, the wheel containing the remainder of the tickets is re-opened, and the drawing performed in the manner above described, and so on till all the drawings are finished.

The "Snowball" Co-operative Agency, or "*How to obtain a Pound of Tea for a Penny.* — Buy one of our tea agency tickets for one penny, and in exchange for this ticket and fourpence in cash, we will give you a book containing four more tickets, which you must sell at a penny each to four persons desirous of earning a pound of tea upon the same system. As soon as these persons have each bought from us a similar book of tickets, you will be entitled to your pound of tea without any further charge whatever. You may get from us the books for your customers if you like."

It will be noticed that by the above scheme the tea-man is bound to receive 1s. 9d. for every pound of tea before he has to part with it!

Rules for a Buying Pool.— In some towns where kindly feeling exists among a few members of the retail trade, it has been found advantageous to unite in buying certain articles which have to be bought in large quantities to secure best terms, and the following rules have been found to work well:—

We, the undersigned retail grocers of ——, do hereby agree among ourselves that we will put £10 each into a common fund, to be used for the purpose of buying goods in large quantities at lowest prices.

Rule 1.—We agree to elect from among our number, by ballot, one person who shall do the buying, without compensation, for all, and who shall give a good bond. The cost of procuring the bond to be shared by us all equally.

Rule 2.—Any goods bought shall be divided among us in such quantities as may be ordered by each of us from time to time, and the cost to each of us shall be actual cost and no more, and no preference or difference of rebate shall be allowed to any one of us.

Rule 3.—We agree to meet once each week to arrange selling prices, to hand in our orders for future purchases, and to transact any and all business which may come up.

Rule 4.—We agree that all goods bought through this arrangement shall

be sold by each of us at such a price as is mutually agreed upon at our meetings from time to time, and that we will not cut the price.

Rule 5.—If any subscriber shall persistently violate this agreement by cutting the price on goods bought under this plan, his £10 shall be at once returned to him, and he shall be excluded from further participation in this buying together. (See p. 1092).

Income Tax.—For several years Income Tax has been payable in advance. As already shown it is charged from April 5th of one year to April 5th of the following year.

It is to be computed on the average profits of the two or three preceding years, or if the business be commenced within twelve months, the assessors seem to be guided by the ordinary rate of profits made by others in the same line of business.

The first communication received is a large form of four pages, which you are requested to fill up so as to show your income from every source. Many persons find this somewhat difficult to do, being unable to see what the income for the next twelve months is going to be. You must therefore be guided by the profits of the previous years, or, if a new beginner, put down your expectations and return the form within twenty-one days.

The next document received is probably a notice of assessment at a much higher figure, perhaps double what you have put down. This means that the assessors assume you have underestimated your income. The form tells you that if you wish to appeal you may do so by giving notice within such a time. Many persons pay the overcharge rather than waste the time and trouble of appealing. It is best, however, to give due notice, and if the assessors do not recede from their computation, or the surveyor on examining your account does not reduce the amount to your satisfaction, you will in due course receive two or three days' notice to attend before the Commissioners with your books or accounts, and to answer such questions as may be put to you. Fifty or sixty appeals may all be appointed for hearing in a single day. A general waiting room is provided, and each appellant, in his or her turn, is afterwards called into the Commissioners' room adjoining, every case thus being heard privately, and not in the hearing of the other appellants. The Commissioners, having listened to what the surveyor has to say on the one side, and you on the other, then decide what amount you ought to pay.

Three-fourths of the appeals seem to be thus settled, and only occupy about five minutes each after being called on.

A few days or weeks after this you will receive a demand note for the amount payable, if any; but, after paying this, if you find on the expiry of the year your actual income or profits have not reached the amount you have paid upon, you can again appeal to the Surveyor and District Commissioners, and recover the amount overpaid.

Any overpaid Income Tax may indeed be recovered if claimed within six months after the expiration of the year of assessment. Thus all claims for the year of assessment, April 6, 1901, to April 5, 1902, should be made before October 5, 1902, and only one year's overpayment will be refunded. If your profits for one year show £200, second year £100, third year, £150, altogether £450, which divided by three shows it has averaged only £150 a year, therefore, being under £160, you can claim total exemption for the three years, and can recover the amount of tax paid on first year. This claim must be made on the proper form, obtainable by letter from the Chief Examiner of Claims, Inland Revenue, Somerset House, London. In writing for it the claimant must state his object, and whether he wants form No. 40 (for total exemption), or form No. 40A (for abatement).

A great number of persons, however, fail to get any reduction of assessment or any return of over-payment because their accounts or balance-

sheets are not "made out in proper form," and what that form should be is not easy for a novice to find out, nor does it appear to be to the interest of the officials to give the desired information. The following example may, therefore, be useful for ordinary shopkeepers:—

J. Jones's Trading a/c for Year ending December 31, 1900.

Dr.	£	s.	d.	Cr.	£	s.	d.
To Stock on hand Dec.. 31, 1899	500	6	0	By Cash received during 1900	4,450	10	0
,, Debtors, Dec. 31, 1899	184	0	0	,, Debtors, Dec. 31, 1900	440	0	0
,, Goods received during 1900	4,000	0	0	,, Stock on hand, Dec. 31, 1900	550	0	0
,, Bad Debts, 1900	25	0	0				
,, Trade Expenses	275	0	0				
,, Balance (nett Profits)	456	4	0				
	5,440	10	0		5,440	10	0

This account shows net Profits from one year's business	£456
which being over £400 and under £500, is subject to an abatement of	100
	356
And being under £700 is subject to a special rebate of	70
	286
Also subject to deduction of premium paid for life assurance, or for deferred annuity for widow in case of death	40
	246

Income Tax at the present rate of 1/10 in the £,=£12 0s. 0d.

Trade expenses comprise rents, ground rents, mortgages, taxes (except Income Tax), rates, fire insurance, fuel, lighting, and repairs of business premises (but not enlargements or similar improvements).

Board and wages of assistants, including also any members of own family if wholly engaged in the business, and *bonâ-fide*.

Cost, wear and tear, repairs, utensils, tools, and appliances, including engines, vehicles, harness, horse keep, etc.

Diminished annual value of fixtures, horses, waggons, carts, etc.

Bad debts, also doubtful debts according to value, or an average of nett loss for three years.

Interest of borrowed capital, bankers' charges, carriage of goods, travelling expenses, licences, trade subscriptions, telegraph, telephone, printing, stationery, advertising, postages, and all similar expenses of trade.

It must, however, be clearly understood that only payments, etc., made strictly for trade or professional purposes are allowable, and none for private purposes, such as the maintenance of the shopkeeper's self and family.

Money expended in enlarging or improving a shop is regarded as an outlay of capital ,and is not allowable as an expense deduction from Income Tax.

The purchase of trade utensils also

is to be regarded as an investment, and is not deducted, but renewal or repairs of worn utensils is allowed as an expense.

If the premises be partly occupied by the trader as a dwelling, then only a reasonable part of the rent, rates, lighting, fuel, etc., is allowable, and never exceeding two-thirds of the whole. In cases of partnership the firm is assessed as a whole; but if any member is entitled to exemption, each partner may be charged separately.

It is not generally known that the Income Tax on houses and land, payable by the tenant, and usually deducted from the rent, may be wholly or partly recovered from Somerset House by the landlord if his total income be under £160, £400, or £500.

General Holidays.-Banks of England and Ireland, and the Exchequer: Good Friday, Easter Monday, Whit Monday, First Monday in August, Christmas Day and following day, or, if that be Sunday, then the Bank is closed on Monday. The Stock Exchange, in addition to the Bank holidays, is also closed on May 1st and November 1st. In Scotland: New Year's Day, Good Friday, First Monday in May, First Monday in August, and Christmas day.

First Day of the Year.—Many people have been perplexed by the circumstance that the year began on different dates in various ages. The year began at Christmas in the 7th to 14th centuries, but in the 12th century, by the Church on March 25th, in the 14th century, by civilians, same time. In 1752 the new style was introduced, the old September 3rd becoming September 14th, and the year dating from January 1st. Previous to this two dates were used, one for the civil year, and the other for the historical; the former commenced March 25th, and the latter January 1st. Another change was made in the calendar by the same Act, 24 Geo. II. c, 23; the day after September 2nd was accounted the 14th, hence the difference between Old and New Michaelmas and other days.

Other notable days are:—
New Year's Day, January 1st.
Candlemas Day, February 2nd.
St. Patrick's Day, March 17th.
Lady Day, March 25th.
Primrose Day, April 19th.
St. George's Day, April 23rd.
Longest day, June 21st.
Midsummer Day, June 24th.
Orangeman's Day, July 12th.
Lammas Day, August 1st.
Michaelmas Day, September 29th.
Hallowmas Eve (Nutcrack Night), October 31st.
King's Birthday, November 9th.
Martinmas Day, November 11th.
Christmas Day, December 25th.

Retailer's Profits.—"A uniform rate of profit on every article sold" sounds very plausible, but is both impracticable and unreasonable. Ten or even five per cent. on some articles will pay fairly well, whereas twenty-five to fifty per cent. on some others is really inadequate. The labour, draught or overweight, cost of paper, twine, etc., involved in weighing-up tea, sugar, and spices in small quantities are expenses entirely absent in handing out proprietary articles Rapidity of sale and the frequent turn-over of capital is also an important consideration. The man who employs £50 in quick-selling goods which may be turned over twenty-five times a year and only leave five per cent. each time, turns his £50 into £112; but £50 laid out in slow selling leaving 50 per cent., may possibly be turned over only once a year and realise only £75, although the labour on the latter may be more than on the former.

It would also appear unreasonable to be selling ounces of tea at same rate as pounds.

Suffice it to say there are so many differences and contingencies to reckon with that no general rule worth the name can be set down.

All the retailer can do is to endeavour to suit his stock, his prices and his profits to his own neighbourhood and fit himself into the best groove, but a groove which might be ruinous in another locality.

PERPETUAL CALENDAR.

Take the index letter above the given year for the century required; in a line with the given month, and the corresponding letter; above are the days of the month and week.

The Leap Years follow the blank spaces; but for January and February of these years use the index letters *above* the blank spaces.

C	B	A	G	F	E	D
E	D	C	B	A	G	F
G	F	E	D	C	B	A
00	01	02	03		04	05
06	07		08	09	10	11
	12	13	14	15		16
17	18	19		20	21	22
23		24	25	26	27	
28	29	30	31		32	33
34	35		36	37	38	39
	40	41	42	43		44
45	46	47		48	49	50
51		52	53	54	55	
56	57	58	59		60	61
62	63		64	65	66	67
	68	69	70	71		72
73	74	75		76	77	78
79		80	81	82	83	
84	85	86	87		88	89
90	91		92	93	94	95
	96	97	98	99		

Index Letters for the 18th Century, 1701 to 1800.

Index Letters for the 19th Century, 1801 to 1900.

Index Letters for the 20th Century.

1 S.	1 Sa.	1 F.	1 Th.	1 W.	1 Tu.	1 M.
2 M.	2 S.	2 Sa.	2 F.	2 Th.	2 W.	2 Tu.
3 Tu.	3 M.	3 S.	3 Sa.	3 F.	3 Th.	3 W.
4 W.	4 Tu.	4 M.	4 S.	4 Sa.	4 F.	4 Th.
5 Th.	5 W.	5 Tu.	5 M.	5 S.	5 Sa.	5 F.
6 F.	6 Th.	6 W.	6 Tu.	6 M.	6 S.	6 Sa.
7 Sa	7 F.	7 Th.	7 W.	7 Tu.	7 M.	7 S.
8 S.	8 Sa.	8 F.	8 Th.	8 W.	8 Tu.	8 M.
9 M.	9 S.	9 Sa.	9 F.	9 Th.	9 W.	9 Tu.
10 Tu.	10 M.	10 S.	10 Sa.	10 F.	10 Th.	10 W.
11 W.	11 Tu.	11 M.	11 S.	11 Sa.	11 F.	11 Th.
12 Th.	12 W.	12 Tu.	12 M.	12 S.	12 Sa.	12 F.
13 F.	13 Th.	13 W.	13 Tu.	13 M.	13 S.	13 Sa.
14 Sa.	14 F.	14 Th.	14 W.	14 Tu.	14 M.	14 S.
15 S.	15 Sa.	15 F.	15 Th.	15 W.	15 Tu.	15 M.
16 M.	16 S.	16 Sa.	16 F.	16 Th.	16 W.	16 Tu.
17 Tu.	17 M.	17 S.	17 Sa.	17 F.	17 Th.	17 W.
18 W.	18 Tu.	18 M.	18 S.	18 Sa.	18 F.	18 Th.
19 Th.	19 W.	19 Tu.	19 M.	19 S.	19 Sa.	19 F.
20 F.	20 Th.	20 W.	20 Tu.	20 M.	20 S.	20 Sa.
21 Sa.	21 F.	21 Th.	21 W.	21 Tu.	21 M.	21 S.
22 S.	22 Sa.	22 F.	22 Th.	22 W.	22 Tu.	22 M.
23 M.	23 S.	23 Sa.	23 F.	23 Th.	23 W.	23 Tu.
24 Tu.	24 M.	24 S.	24 Sa.	24 F.	24 Th.	24 W.
25 W.	25 Tu.	25 M.	25 S.	25 Sa.	25 F.	25 Th.
26 Th.	26 W.	26 Tu.	26 M.	26 S.	26 Sa.	26 F.
27 F.	27 Th.	27 W.	27 Tu.	27 M.	27 S.	27 Sa.
28 Sa.	28 F.	28 Th.	28 W.	28 Tu.	28 M.	28 S.
29 S.	29 Sa.	29 F.	29 Th.	29 W.	29 Tu.	29 M.
30 M.	30 S.	30 Sa.	30 F.	30 Th.	30 W.	30 Tu.
31 Tu.	31 M.	31 S.	31 Sa.	31 F.	31 Th.	31 W.

JANUARY	A	B	C	D	E	F	G
FEBRUARY	D	E	F	G	A	B	C
MARCH	D	E	F	G	A	B	C
APRIL	G	A	B	C	D	E	F
MAY	B	C	D	E	F	G	A
JUNE	E	F	G	A	B	C	D
JULY	G	A	B	C	D	E	F
AUGUST	C	D	E	F	G	A	B
SEPTEMBER	F	G	A	B	C	D	E
OCTOBER	A	B	C	D	E	F	G
NOVEMBER	D	E	F	G	A	B	C
DECEMBER	F	G	A	B	C	D	E

INTEREST TABLE.

SHOWING THE NUMBER OF DAYS FROM ANY DAY IN ONE MONTH TO THE SAME DAY IN ANY OTHER MONTH.

From	to Jan.	*to Feb.	to March.	to April.	to May.	to June.	to July.	to Aug.	to Sept.	to Oct.	to Nov.	to Dec.
JANUARY... ...	365	31	59	90	120	151	181	212	243	273	304	334
*FEBRUARY ...	334	365	28	59	89	120	150	181	212	242	273	303
MARCH	306	337	365	31	61	92	122	153	184	214	245	275
APRIL	275	306	334	365	30	61	91	122	153	183	214	244
MAY	245	276	304	335	365	31	61	92	123	153	184	214
JUNE	214	245	273	304	334	365	30	61	92	122	153	183
JULY	184	215	243	274	304	335	365	31	62	92	123	153
AUGUST	153	184	212	243	273	304	334	365	31	61	92	122
SEPTEMBER ...	122	153	181	212	242	273	303	334	365	30	61	91
OCTOBER ...	92	123	151	182	212	243	273	304	335	365	31	61
NOVEMBER ...	61	92	120	151	181	214	242	273	304	334	365	30
DECEMBER ...	31	62	90	121	151	182	212	243	274	304	335	365

Example: How many days from March 18th to September 30?

Find *MARCH*, then glance along the line of figures till you come under September to 184, that being the number of days from March 18 to September 18. Then add the odd 12 days=196 days.

* In Leap Year add one, when the 29th day of February is included in time required.

WAGES OR INCOME TABLE.

Per Year.	Per Month.	Per Week.	Per Day.	Per Year.	Per Month.	Per Week.	Per Day.
£ s.	£ s. d.	s. d.	s. d.	£ s.	£ s. d.	£ s. d.	£ s. d.
1 0	0 1 8	0 4½	0 0¾	13 0	1 1 8	0 5 0	0 0 8½
1 10	0 2 6	0 7	0 1	13 13	1 2 9	0 5 3	0 0 9
2 0	0 3 4	0 9¼	0 1¼	14 0	1 3 4	0 5 4⅓	0 0 9¼
2 2	0 3 6	0 9¾	0 1½	14 14	1 4 6	0 5 7¾	0 0 9¾
2 10	0 4 2	0 11½	0 1¾	15 0	1 5 0	0 5 9¼	0 0 9¾
3 0	0 5 0	1 1¾	0 2	15 15	1 6 3	0 6 0¾	0 0 10¼
3 3	0 5 3	1 2½	0 2	16 0	1 6 8	0 6 1¾	0 0 10½
3 10	0 5 10	1 4¼	0 2¼	16 16	1 8 0	0 6 5½	0 0 11
4 0	0 6 8	1 6½	0 2¾	17 0	1 8 4	0 6 6½	0 0 11¼
4 4	0 7 0	1 7½	0 2¾	17 17	1 9 9	0 6 10½	0 0 11¾
4 10	0 7 6	1 8¾	0 3	18 0	1 10 0	0 6 11	0 0 11¾
5 0	0 8 4	1 11	0 3¼	18 18	1 11 6	0 7 3¼	0 1 0½
5 5	0 8 9	2 0	0 3½	19 0	1 11 8	0 7 3¾	0 1 0½
5 10	0 9 2	2 1½	0 3½	20 0	1 13 4	0 7 8½	0 1 1¼
6 0	0 10 0	2 3¾	0 4	30 0	2 10 0	0 11 6¼	0 1 7¾
6 6	0 10 6	2 5	0 4¼	40 0	3 6 8	0 15 4½	0 2 2¼
6 10	0 10 10	2 6	0 4¼	50 0	4 3 4	0 19 2¾	0 2 9
7 0	0 11 8	2 8¼	0 4½	60 0	5 0 0	1 3 1	0 3 3½
7 7	0 12 3	2 10	0 4¾	70 0	5 16 8	1 6 11	0 3 10
7 10	0 12 6	2 10½	0 5	80 0	6 13 4	1 10 9¼	0 4 4½
8 0	0 13 4	3 1	0 5¼	90 0	7 10 0	1 14 7½	0 4 11¼
8 8	0 14 0	3 2¾	0 5½	100 0	8 6 8	1 18 5½	0 5 5¾
8 10	0 14 2	3 3½	0 5½	200 0	16 13 4	3 16 11	0 10 11½
9 0	0 15 0	3 5½	0 6	300 0	25 0 0	5 15 4½	0 16 5¼
9 9	0 15 9	3 7½	0 6¼	400 0	33 6 8	7 13 10¼	1 1 11
10 0	0 16 8	3 10¼	0 6½	500 0	41 13 4	9 12 3¾	1 7 4¾
10 10	0 17 6	4 0½	0 7	600 0	50 0 0	11 10 9¼	1 12 10½
11 0	0 18 4	4 3¾	0 7¼	700 0	58 6 8	13 9 2¾	1 18 4¼
11 11	0 19 3	4 5¼	0 7½	800 0	66 13 4	15 7 8¼	2 3 10
12 0	1 0 0	4 7½	0 8	900 0	75 0 0	17 6 1¾	2 9 3¾
12 12	1 1 0	4 10¼	0 8¼	1000 0	83 6 8	19 4 7¼	2 14 9

Salary per month always means per calendar month unless it is otherwise expressly stated.

By the above it may be seen at a glance what £1 to £1000 a year is by the calendar month, week, or day. If the sum be guineas instead of pounds, add one penny to each month, or one farthing each week.

INTEREST, DISCOUNTS OR COMMISSION.

¾	%	is 1½d.	in the £	30	%	is 6/-	in the £	67½	%	is 13/6	in the £
1¼	%	is 3d.	in the £	32½	%	is 6/6	in the £	70	%	is 14/-	in the £
2½	%	is 6d.	in the £	35	%	is 7/-	in the £	72½	%	is 14/6	in the £
3¾	%	is 9d.	in the £	37½	%	is 7/6	in the £	75	%	is 15/-	in the £
5	%	is 1/-	in the £	40	%	is 8/-	in the £	77½	%	is 15/6	in the £
6¼	%	is 1/3	in the £	42½	%	is 8/6	in the £	80	%	is 16/-	in the £
7½	%	is 1/6	in the £	45	%	is 9/-	in the £	82½	%	is 16/6	in the £
10	%	is 2/-	in the £	47½	%	is 9/6	in the £	85	%	is 17/-	in the £
12½	%	is 2/6	in the £	50	%	is 10/-	in the £	87½	%	is 17/6	in the £
15	%	is 3/-	in the £	52½	%	is 10/6	in the £	90	%	is 18/-	in the £
17½	%	is 3/6	in the £	55	%	is 11/-	in the £	92½	%	is 18/6	in the £
20	%	is 4/-	in the £	57½	%	is 11/6	in the £	95	%	is 19/-	in the £
22½	%	is 4/6	in the £	60	%	is 12/-	in the £	97½	%	is 19/6	in the £
25	%	is 5/-	in the £	62½	%	is 12/6	in the £	100	%	is 20/-	in the £
27½	%	is 5/6	in the £	65	%	is 13/-	in the £				

A TABLE FOR REDUCING THE COST OF POUNDS INTO OUNCES, OR YARDS INTO NAILS.

16 Ounces to a Pound, and 16 Nails to a Yard.

This table gives the cost of articles at per Ounce or Nail if bought or sold by the Pound or Yard from 4d. to 27s. 8d. per Pound or Yard, and from a Farthing to Twenty Pence per Ounce or Nail.

Per lb. or yard. s. d.		Per oz. or nail. d.
0 4	is a farthing	0¼
0 8	is a halfpenny	0½
1 0	is three farthings ...	0¾
1 4	is a Penny	1
1 8	is „ farthing ...	1¼
2 0	is „ halfpenny ...	1½
2 4	is „ three farthings	1¾
2 8	is Twopence	2
3 0	is „ farthing ...	2¼
3 4	is „ halfpenny ...	2½
3 8	is „ three farthings	2¾
4 0	is Threepence	3
4 4	is „ farthing ...	3¼
4 8	is „ halfpenny ...	3½
5 0	is „ three farthings	3¾
5 4	is Fourpence	4
5 8	is „ farthing ...	4¼
6 0	is „ halfpenny ...	4½
6 4	is „ three farthings	4¾
6 8	is Fivepence	5
7 0	is „ farthing ...	5¼
7 4	is „ halfpenny ...	5½
7 8	is „ three farthings	5¾
8 0	is Sixpence	6
8 4	is „ farthing ...	6¼
8 8	is „ halfpenny ...	6½
9 0	is „ three farthings	6¾
9 4	is Sevenpence	7
9 8	is „ farthing ...	7¼
10 0	is „ halfpenny ...	7½
10 4	is „ three farthings	7¾
10 8	is Eightpence	8

Per lb. or yard. s. d.		Per oz or nail d.
11 0	is Eightpence farthing	8¼
11 4	is „ halfpenny ...	8½
11 8	is „ three farthings	8¾
12 0	is Ninepence	9
12 4	is „ farthing ...	9¼
12 8	is „ halfpenny ...	9½
13 0	is „ three farthings	9¾
13 4	is Tenpence	10
13 8	is „ farthing ...	10¼
14 0	is „ halfpenny ...	10½
14 4	is „ three farthings	10¾
14 8	is Elevenpence ...	11
15 0	is „ farthing ...	11¼
15 4	is „ halfpenny ...	11½
15 8	is „ three farthings	11¾
16 0	is Twelvepence ...	12
16 8	is „ halfpenny ...	12½
17 4	is Thirteenpence ...	13
18 0	is „ halfpenny ...	13½
18 8	is Fourteenpence ...	14
19 4	is „ halfpenny ...	14½
20 0	is Fifteenpence ...	15
20 8	is „ halfpenny ...	15½
21 4	is Sixteenpence ...	16
22 0	is „ halfpenny ...	16½
22 8	is Seventeenpence ...	17
23 4	is „ halfpenny ...	17½
24 0	is Eighteenpence ...	18
24 8	is „ halfpenny ...	18½
25 4	is Nineteenpence ...	19
26 0	is „ halfpenny ...	19
27 8	is Twentypence ...	20½

Table for finding the value of 1 cwt. and fractions at various rates per ton.

Rate per Ton.	Per Cwt.	¾ Cwt.	½ Cwt.	¼ Cwt.	14 lbs.	7 lbs.
s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
0 10 per ton equals	0 0½	0 0⅜	0 0¼	0 0⅛	..	..
1 8 ,,	0 1	0 0¾	0 0½	0 0¼	0 0⅜	..
2 6 ,,	0 1½	0 1¼	0 0¾	0 0½	0 0¼	0 0⅛
3 4 ,,	0 2	0 1½	0 1	0 0¼	0 0½	0 0⅛
4 2 ,,	0 2½	0 2	0 1¼	0 0⅜	0 0½	0 0¼
5 0 ,,	0 3	0 2¼	0 1½	0 0¾	0 0½	0 0¼
5 10 ,,	0 3½	0 2¾	0 1¾	0 1	0 0½	0 0¼
6 8 ,,	0 4	0 3	0 2	0 1	0 0½	0 0¼
7 6 ,,	0 4½	0 3½	0 2¼	0 1¼	0 0⅜	0 0⅛
8 4 ,,	0 5	0 3¾	0 2½	0 1¼	0 0⅜	0 0⅛
9 2 ,,	0 5½	0 4¼	0 2¾	0 1⅜	0 0⅜	0 0⅛
10 0 ,,	0 6	0 4½	0 3	0 1½	0 0⅜	0 0⅛
10 10 ,,	0 6½	0 5	0 3¼	0 1⅝	0 1	0 0½
11 8 ,,	0 7	0 5¼	0 3½	0 1¾	0 1	0 0½
12 6 ,,	0 7½	0 5¾	0 3¾	0 2	0 1	0 0½
13 4 ,,	0 8	0 6	0 4	0 2	0 1	0 0½
14 2 ,,	0 8½	0 6½	0 4¼	0 2⅛	0 1⅛	0 0⅝
15 0 ,,	0 9	0 6¾	0 4½	0 2¼	0 1⅛	0 0⅝
15 10 ,,	0 9½	0 7¼	0 4¾	0 2⅜	0 1¼	0 0⅝
16 8 ,,	0 10	0 7½	0 5	0 2½	0 1¼	0 0⅝
17 6 ,,	0 10½	0 8	0 5¼	0 2⅝	0 1⅜	0 0¾
18 4 ,,	0 11	0 8¼	0 5½	0 2¾	0 1⅜	0 0¾
19 2 ,,	0 11½	0 8¾	0 5¾	0 3	0 1½	0 0¾
20 0 ,,	1 0	0 9	0 6	0 3	0 1½	0 0¾
21 8 ,,	1 1	0 9¾	0 6½	0 3¼	0 1⅝	0 1
23 4 ,,	1 2	0 10½	0 7	0 3½	0 1⅝	0 1
25 0 ,,	1 3	0 11¼	0 7½	0 3¾	0 2	0 1
26 8 ,,	1 4	1 0	0 8	0 4	0 2	0 1
28 4 ,,	1 5	1 0¾	0 8¾	0 4½	0 2¼	0 1⅛
30 0 ,,	1 6	1 1½	0 9	0 4½	0 2¼	0 1⅛
33 4 ,,	1 8	1 3	0 10	0 5	0 2½	0 1¼
36 8 ,,	1 10	1 4½	0 11	0 5½	0 2¾	0 1⅜
40 0 ,,	2 0	1 6	1 0	0 6	0 3	0 1½

Prices per lb., per cwt. and per ton.

Per Lb.	Per Cwt.	Per Ton.	Per Lb.	Per Cwt.	Per Ton.	Per Lb.	Per Cwt.	Per Ton.
d.	s. d.	£ s. d.	d.	s. d.	£ s. d.	d.	s. d.	£ s. d.
¼	2 4	2 6 8	4¼	39 8	39 13 4	8¼	77 0	77 0 0
½	4 8	4 13 4	4½	42 0	42 0 0	8½	79 4	79 6 8
¾	7 0	7 0 0	4¾	44 4	44 6 8	8¾	81 8	81 13 4
1	9 4	9 6 8	5	46 8	46 13 4	9	84 0	84 0 0
1¼	11 8	11 13 4	5¼	49 0	49 0 0	9¼	86 4	86 6 8
1½	14 0	14 0 0	5½	51 4	51 6 8	9½	88 8	88 13 4
1¾	16 4	16 6 8	5¾	53 8	53 13 4	9¾	91 0	91 0 0
2	18 8	18 13 4	6	56 0	56 0 0	10	93 4	93 6 8
2¼	21 0	21 0 0	6¼	58 4	58 6 8	10¼	95 8	95 13 4
2½	23 4	23 6 8	6½	60 8	60 13 4	10½	98 0	98 0 0
2¾	25 8	25 13 4	6¾	63 0	63 0 0	10¾	100 4	100 6 8
3	28 0	28 0 0	7	65 4	65 6 8	11	102 8	102 13 4
3¼	30 4	30 6 8	7¼	67 8	67 13 4	11¼	105 0	105 0 0
3½	32 8	32 13 4	7½	70 0	70 0 0	11½	107 4	107 6 8
3¾	35 0	35 0 0	7¾	72 4	72 6 8	11¾	109 8	109 13 4
4	37 4	37 6 8	8	74 8	74 13 4	12	112 0	112 0 0

Thermometer Tables showing the equivalents of the *Fahrenheit*, *Réaumur* and *Centigrade* Scales.

Ft.	Rr.	Ce.	Ft.	Rr.	Ce.	Ft.	Rr.	Ce.	Ft.	Rr.	Ce.	Ft.	Rr.	Ce.
350	141·3	176·6	272	106·6	133·3	194	72·0	90·0	116	37·3	46·6	38	2·6	3·3
349	140·8	176·1	271	106·2	132·7	193	71·5	89·4	115	36·8	46·1	37	2·2	2·7
348	140·4	175·5	270	105·7	132·2	192	71·1	88·8	114	36·4	45·5	36	1·7	2·2
347	140·	175·	269	105·3	131·8	191	70·6	88·3	113	36·0	45·0	35	1·3	1·6
346	139·5	174·4	268	104·8	131·1	190	70·2	87·7	112	35·5	44·4	34	0·8	1·1
345	139·1	173·8	267	104·4	13 ·5	189	6 ·7	87·2	111	35·1	43·8	33	0·4	0·5
344	138·6	173·3	266	104·	130·	188	69·3	86·6	110	34·6	43·3	32	0·0	0·0
343	138·2	172·7	265	103·5	129·4	187	6 ·8	86·1	1 9	34·2	42·7	31	— 0·4	— 0·5
342	137·7	172·2	264	103·1	128·8	186	68·4	85·5	108	33·7	42·2	30	— 0·8	— ·1
341	137·3	171·6	263	102·6	128·3	185	68·0	85·0	107	33·3	41·6	29	— 1·3	— 1·6
340	136·8	171·1	262	102·2	127·7	184	67·5	84·4	106	32·8	41·1	28	— 1·7	— 2·2
339	136·4	170·5	261	101·7	127·2	183	67·1	83·8	105	32·4	40·5	27	— 2·2	— 2·7
338	136·	170·	260	101·3	126·6	182	66·6	83·3	104	32·0	40·0	26	— 2·6	— 3·3
337	135·5	169·4	259	100·8	126·1	181	66·2	82·7	103	31·5	39·4	25	— 3·1	— 3·8
336	135·1	168·8	258	100·4	125·5	180	65·7	82·2	102	31·1	38·8	24	— 3·5	— 4·
335	134·6	168·3	257	100·	125·	179	65·3	81·6	101	30·6	38·3	23	— 4·0	— 5·0
334	134·2	167·7	256	99·5	124·4	178	64·8	81·1	100	30·2	37·7	22	— 4·4	— 5·5
333	133·7	167·2	255	99·1	123·8	177	64·4	80·5	99	29·7	37·2	21	— 4·8	— 6·1
332	133·3	166·6	254	98·6	123·3	176	64·0	80·0	98	29·3	36·6	2	— 5·3	— 6·6
331	132·8	166·1	253	98·2	122·7	175	63·5	79·4	97	28·8	36·1	19	— 5·7	— 7·2
330	132·4	165·5	252	97·7	122·2	174	63·1	78·8	96	28·4	35·5	1	— 6·2	— 7·7
329	132·	165·	251	97·3	121·6	173	62·6	78·3	95	28·0	35·0	17	— 6·6	— 8·3
328	131·5	164·4	250	96·8	121·1	172	62·2	77·7	94	27·5	34·4	16	— 7·1	— 8·8
327	131·1	163·8	249	96·4	120·5	171	61·7	77·2	93	27·1	33·8	15	— 7·5	— 9·4
326	130·6	163·3	248	96·	120·	170	6 ·3	76·6	92	26·6	33·3	14	— 8·0	— 10·0
325	130·2	162·7	247	95·5	119·4	169	60·8	76·1	91	26·2	32·7	13	— 8·4	—10·5
324	129·7	162·2	246	95·1	118·8	168	60·4	75·5	90	25·7	32·2	12	— 8·8	—11·1
323	129·3	161·6	245	94·6	118·3	167	60·0	75·0	89	25·3	31·6	11	— 9·3	—11·6
322	128·8	161·1	244	94·2	117·7	166	59·5	74·4	88	24·8	31·1	10	— 9·7	—12·2
321	128·4	160·5	243	93·7	117·2	165	59·1	73·8	87	24·4	30·5	9	—10·2	—12·7
320	128·	160·	242	93·3	116·6	164	58·6	73·3	86	24·0	30·0	8	—10·6	—13·3
319	127·5	159·4	241	92·8	116·1	163	58·2	72·7	85	23·5	29·4	7	—11·1	—13·8
318	127·1	158·8	240	92·4	115·5	162	57·7	72·2	84	23·1	28·8	6	—11·5	—14·4
317	126·6	158·3	239	92·	115·	161	57·3	71·6	83	22·6	28·3	5	—12·0	—15·0
316	126·2	157·7	238	91·5	114·4	160	56·8	71·1	82	22·2	27·7	4	—12·4	—15·5
315	125·7	157·2	237	91·1	113·8	159	56·4	70·5	81	21·7	27·2	3	—12·8	—16·1
314	125·3	156·6	236	90·6	113·3	158	56·0	70·0	80	21·3	26·6	2	—13·3	—16·6
313	124·8	156·1	235	90·2	112·7	157	55·5	69·4	79	20·8	26·1	1	—13·7	—17·2
312	124·4	155·5	234	99·7	112·2	156	55·1	68·8	78	20·4	25·5	0	—14·2	—17·7
311	124·	155·	233	89·3	111·6	155	54·6	68·3	77	20·0	25·0	— 1	—14·6	—18·3
309	123·1	153·8	231	88·4	110·5	153	53·7	67·2	75	19·1	23·8	— 3	—15·5	—19·4
307	122·2	152·7	229	87·5	109·4	151	52·8	66·1	73	18·2	22·7	— 5	—16·4	—20·5
305	121·3	151·6	227	86·6	108·3	149	52·0	65·0	71	17·3	21·6	— 7	—17·3	—21·6
303	120·4	150·5	225	85·7	107·2	147	51·1	63·8	69	16·4	20·5	— 9	—18·2	—22·7
301	119·5	149·4	223	84·8	106·1	145	50·2	62·7	67	15·5	19·4	—11	—19·1	—23·8
299	118·6	148·3	221	84·	105·	143	49·3	61·6	65	14·6	18·3	—13	—20·0	—25·0
297	117·7	147·2	219	83·1	103·8	141	48·4	60·5	63	13·7	17·2	—15	—20·8	—26·1
295	116·8	146·1	217	82·2	102·7	139	47·5	5 ·4	61	12·8	16·1	—17	—21·7	—27·2
293	116·	145·	215	81·3	101·6	137	46·6	58·3	59	12·0	15·0	—19	—22·6	—28·3
291	115·1	143·8	213	80·4	100·5	135	45·7	57·2	57	11·1	13·8	—21	—23·5	—29·4
290	114·6	143·3	212	80·0	100·0	134	45·3	56·6	56	10·6	13·3	—22	—24·0	—30·0
289	114·2	142·7	211	79·5	99·4	133	44·8	56·1	55	10·2	12·7	—23	—24·4	—30·5
287	113·3	141·6	209	78·6	98·3	131	44·0	55·0	53	9·3	11·6	—25	—25·3	—31·6
285	112·4	140·5	207	77·7	97·2	129	43·1	53·8	51	8·4	10·5	—27	—26·2	—32·7
283	111·5	139·4	205	76·8	96·1	127	42·2	52·7	49	7·5	9·4	—29	—27·1	—33·8
281	110·6	138·3	203	76·0	95·0	125	41·3	51·6	47	6·6	8·3	—31	—28·0	—35·3
279	109·7	137·2	201	75·1	93·8	123	40·4	50·5	45	5·7	7·2	—3	—28·8	—36·1
277	108·8	136·1	199	74·2	92·7	121	39·5	49·4	43	4·8	6·1	—35	—29·7	—37·2
275	108·	135·	197	73·3	91·6	119	38·6	48·3	41	4·0	5·0	—37	—30·6	—38·3
273	107·1	133·8	195	72·4	90·5	117	37·7	47·2	39	3·1	3·8	—39	—31·5	—39·4

Reductions from one scale to another are easily made as follow:—*Fahrenheit to Centigrade*: deduct 32°, multiply by 5, and divide by 9. *Centigrade to Fahrenheit*: multiply by 9, divide by 5, and add 32°. *Réaumur to Fahrenheit*: multiply by 9, divide by 4, and add 32°.

Boiling point of water 212° F. Freezing point 32°. Normal temperature of water 54°. Mineral waters 57 to 60°. Beer 57 to 60°. New milk 60 to 64°. Hot milk 93 to 95°. Coffee 75 to 79°. Tea 100 to 125°.

Rules of Thumb. — *To find the value of a dozen articles.*—Take the price in pence as shillings, and if there be any farthings in the price add 3d. for each. Thus 1/8 or 20 pence per lb. is 20/- per dozen.

2. *To find the value of a hundred articles.*—For every farthing take as many pence and twice as many shillings. Thus, 1½d. each is 3d., and 12/-=12/6 per 100.

3. *To find the value of* 1 *lb. at any price per oz.*—Take the price in farthings as shillings, and divide by 3. Example, 5½d. per oz. is 21 farthings taken as shillings 21 ÷ 3=7/- per lb.

4. *To find the value of an oz. at any price per lb.*—Take the shillings as farthings and multiply by 3. Thus, at 6/-=6 x 3=18 farthings, or 4½d. per oz.

By reversing No. 1 and 2, the price of a single article or lb. may be found from the price per dozen or per 100.

Foreign Moneys, Weights and Measures, with approximate equivalents in English.

The English value of some of these foreign moneys fluctuates somewhat considerably according to the current rate of exchange; there is also often a great difference in value between paper money and coin of the same amount.

Abyssinia.—1 Ferssla=40 lbs.; 1 Maria Theresa dollar=4/- to 5/- according to distance from the coast, 1 Menek dollar=4-5 of a M.T. dollar. The only small change for a dollar consists of either rifle cartridges or of pieces of rock salt ("amoles") about 8 in. long and 2 in. broad at thickest part, and closely resembling a scythe whetstone, 4 or 5 amoles=1 dollar.

Algeria.—Sequin=8/6.

Anam, Annam, or *Cochin China.*—60 sopeks=1 mass or heap=3½d. The largest gold coin in existence is said to be the gold ingot of Annam, a flat, round piece, worth about £65, the value being written across it in Indian ink. The wild bushmen weigh their gold dust by grains of maize and rice. Accounts kept in French and American moneys.

Angola. 1,000 reis=1 milreis=4/6⅝; arroba=32 lbs., almunde=34 lbs., cazingale=28 lbs.

Arabia.—80 caveers=1 piastre=3/8, Spanish dollar=1 1-5 piastre, 1 abushee=1/3; 40 kellahs=1 tomand=170 lbs., 8 noosfias=1 gudda=2 gals.. 15 vakias=1 rottolo=1 lb. 2 oz., 40 vakias=1 maund=3 lb.

Argentine Confederation.—100 cents.=1 peso fuerte or dollar=4/-; 25 libras=1 arroba=25 3-10 lbs., 1 barrile=2 1-10 gals., 7½ fanegas=1 ton.

Australia.—Same as English.

Austria.—100 new kreuzer=1 gulden or florin=1/11½, 1 vereins thaler =2/11½, 1 Maria Theresa thaler (silver)=1/10½, 1 dukaten=9/4¾, 8 gulden piece=15/10 or 20 francs; 2 marks=1 pfund=1½lbs. about; 100 pfund=1 centner=123½ lbs., 2 zol=1 fuss=1½ ft., 2 seidel=1 kanne=1¼ pint, 1 eimer=12 gals.

Belgium.—Florin = 1/8; quintal=108½ lbs. (French money, weights, and measures are now generally used.

Brazil.—1,000 reis=1 milreis=2/3½, 10 milreis=22/6; 16 aucas=1 arratel =1½ lbs., 4 aliqueiras=1 fanga=1½ imp. bushels, 6 canadas=1 cantaro (pota)=1½ gals., (wine) 18 almudas=1 pipa=96 gals., 1 palmos=8¾ inches.

Buenos Ayres.—1 dollar=3/6.

Bulgaria.—1 metical = 5 grammes, 1 lew=1 franc=9¾d., others as in France.

Burmah — Same as India. 100 ticals=1 viss=3½ lbs., 1 abucco=7 ozs., 4 saits=1 ten (basket)=¼ cwt.

Canada.—Same United States.

Ceylon.—See India.

Channel Islands.—The only legal weights in Jersey are the old Norman weights, which differ from both the metric and the English, being 2 per cent. less than the former and 8 per cent. heavier than the latter.

Guernsey and Jersey.—14 oz 11/- drams=1 lb. English, 113 lbs. 14¾ oz.

=112 lbs. English. Rule: To reduce the English pound into the Jersey and Guernsey pound, multiply the English pound by 29, then divide the product by 32, or *vice versâ* in adding 1 lb. for every English 112 lbs., and 14½ ozs. for every 100 Guernsey or Jersey pounds; 14½ ozs. of these Islands weight, and of the Mark pound (8 ozs.) are equal to 1 lb. of the English weight; 102½ lbs. of these weights=112 lbs. English; and 100 lbs. of these Islands are very nearly equal to 109¼ lbs. English.

Chili.—100 centavos = 1 peso (dollar)=4/-; libra=1 1-75 lbs., 25 libras =1 arroba=25⅓ lbs., 1 quintal=101·4 lbs., 1 arroba=7¾ gallons, 1 vara = 33⅓ ins.

China.—24 to 40 cash = 1d., 100 cash =1 "string"=1 mace= 3½d., 10 li= 1 fan (candareen) = ·8d., 10 fan = 1 tsin=8d., 10 tsin=1 tael=6/8. The only coin in China is called cash (tsin), a bronze coin with a hole in the centre for convenience of stringing. It is of uncertain and fluctuating value, the nearest approximation to which is the li of silver, 100 of which would equal about 8d.; tael (leung)=1⅓ oz., catty (kali)=1⅓ lbs., 100 catties=1 picul=133⅓ lbs., tsun = 1 4-10 in., chih=14 1-00 in., chang =11¾ ft., li=2,115 ft., tan=1 13-100 gals. Chop, an arbitrary term for parcel, varies with the commodity—thus, a chop of tea is 600 chests; cotton, 70 to 80 bales; longcloth, 100 trusses; metals, 300 piculs (see p. 717).

Note.—It must be added that there are really no standards in China; weights and money values vary in different districts; in fact, they are never the same except by accident. No one knows what a "catty" is going to be in a new place until he has investigated, and it is the same with the *tael* or ounce, The cash-shop men, or "bankers," seem to settle it. The li, or mile, also fluctuates. The *chang*, or rod, like other units, is only knowable upon inquiry. A carpenter's foot-measurement is one thing, but a tailor's is quite another, and so on. One meets with alleged foot-rules that are about 18 inches long, and with *catties* that weigh up to 28 ounces and over. The *mow*, or acre, varies from 240 to 360 up to 720 *pu*, or paces, and even these latter are of very uncertain magnitude. Indeed, every locality has its own tables.

Columbia (United States of)—Centivo=½d., 100 centavos=1 peso or dollar=nominal value 4/-, actual value 3/4. (Columbia, Equador, and Venezuela have no coinage; English, French, Spanish, and American coins are all used. Weights and measures are the same as in France.)

Costa Rica.—Real = 6¼d., colon de oro=2/0½, peso=4/2; ouza=1 oz., libra=1 lb. (about), vara=33⅓ in.

Cuba and Spanish Colonies.—Real sencillos=5d., real fuertos=6¼d., 100 centimos=1 peseta=9½d., 1,000 milesimos=1 escudo=2/1, 100 Isabellinas or Alphonsinas=£1, dobloon=£1 12/- (about), 2 dobloons=ouza=£3 4/- (about). (American coins are used at par value.) Spanish lb.=1 lb. (about), 25 Spanish lbs.=1 arroba=25⅓ lbs., Arrobo=4 1-10 gals., pipe (rum)=120 gals.

Denmark.—2 öre or × =¼d., 100 öre =1 kroner, K, or crown=1/1⅓, 15 skillings=1 mark, 6 marks=1 rigsbank-taler=2/2⅓, 18 1-10 kroner=£1; 100 kvinter=1 pund=1.102 lbs., 100 pund=1 centner, 4 paegle=1 pot=1 7-10 pint, 8 potter=1 vierter=1 bushel (about, 0.9958 exact). Tonde of land=1.36 acres; of beer=28.92 gals., corn=3.8 bushels, coal=4.6775 bushels, 12 tommer=1 fod=1 foot (about) 1.0297 exact. Danish mile=4⅔ English.

Ecuador.—100 centavos=1 sucre=4/- (about).

Egypt.—40 paras=1 piastre=2d., 1 asper = 1d., 1 abuquelph or griscio = 7/-, 100 piastres = £E1 20/3¼; 1 rottolo=1 lb (0.98046 exact), 1 oke or aka=2¾ lbs. (about, 2.72351 exact), 1 cantar=99.05 lbs., cantar of cotton=99.9 lbs. Ardeb of wheat or maize, about ⅔ quarter (exact 0.63), or 310 rotolis, or 307.05 lbs.; ardeb of barley=250 rotolis, or 247,6225 lbs., 1 zambeel or basket of Egyptian rice =20 or 40 okes=55.0272 or 110.544 lbs. Ardeb of beans or lentils about ⅔ qr.

(exact 0.65), or 326,34 lbs.; 1 feddan =1.038 acres.

Equador. — 100 cents=10 decimos= 9 reals=1 sucre=4/2; 1 arroba= 25 lbs. 7 oz., 4 arrobas=1 quintal= 101 lbs. 12 oz., 1 vera=33⅓ inches.

Fiji.—In Fiji, the coinage consists chiefly of whales' teeth, those of greater value being dyed red. The natives exchange twenty white teeth for one red one, as we change shillings for a sovereign.

Finland. — 100 pennis = 1 mark = 9½d., 25 marks=£1; 22 Finnish lbs. =20 English lbs., 1 Finnish foot=1 English (about, -.0226 exact), 1¾ kanns =1 gallon (about, 1.736 exact), 13 9-10 kannor=1 bushel (about, 13.888 exact); also, as in France.

France — Centime = 19 - 200d., 5 centimes=1 sou; 100 centimes=1 franc= 9½d., Napoleon=20 francs=15/10½, 5 silver francs=3/11½, 25 francs and 20 centimes=£1 (average); about Lyons, 4 liards=1 sou (old), 10 francs= 1 pistole (old); 1 metre=1 yard 3¼ in., 1 yard=91½ centimetres; chopine= ½ litre, 1 litre=1¾ pint (about, 1.7608 exact), 1 quart=1 litre and 13 centilitres, a muid=226 to 950 litres according to the district, hectolitre=22 gals, (liquids) or 2.75 bushels (cereals), 1 sq. kilometre=0.386 of a sq. mile, 1 cubic metre=1.308 cubic yard, are= .0247 acre, hectare=2.47 acres, kilometre=.621 mile, 1,000 grammes=1 kilogramme=2.204 lbs., 5 kilos = 11 lbs., 1 oz. = 24 grammes, 1 lb. =454 grammes, 1 cwt.=50.80 kilos, 1 ton=1,016 kilos, a litre of distilled water weighs 1 kilogramme exactly (see metric system, p. 1,138).

Germany. — Gold coins — 20 reichs mark=£1, 10 reichsmark=10/-, 5 reichsmark= 5s; silver coins—5 mark pieces=5/-, 2 mark=2/-, 1 mark=1/-, 50 pfennige=6d., 20 pf.=2½d.; nickel coins—10 pfennige pieces=1¼d., 5 pf. =½d.; bronze coins—2 pf.=¼d., 1 pf. =⅓d. 1 centner=100 pfund=110¼ lbs. avoirdupois, 1 pfund=500 gramm.= 1.1025 lbs. avoirdupois. The meter or stab=100 centimeter, is the unit, and equals 39.37079 English inches. The square meter or stab=1.9603 sq. yards. The English yard (3 feet) 36 zoll=9⅓ centimeter. The Brabanter elle=70 centimetres.

Note.—The metric system of weights and measures was introduced into Germany shortly after the Franco-German war, but the older Germans in their everyday dealings continue the use of the "pound" almost exclusively. Bills for meat, groceries, etc., are regularly made out in pounds, and scales of the newest construction indicate both kilogrammes and pounds. One kilogramme is exactly two former German pounds, and such German pound therefore equals 1.1023 British pounds. Misunderstandings and troubles often arise between English and Germans when doing business owing to above difference in their respective "pounds."

Great Britain. — 4 farthings = 1d. 12 pence=1 shilling, 2 shillings=1 florin, 20 shillings=£1, 21 shillings= 1 guinea; £1=25 francs 20 centimes French—20 marks German—and 4 dollars 80 cents American.

Old English Coins. — *Gold.* — Moidore =27/-, guinea=21/-, mark 13/4, angel 10/- noble 6/8. Silver—Tester 6d., groat 4d.

12 inches=1 foot, 3 feet=1 yard, 2 pints=1 quart, 4 quarts=1 gallon, 8 gallons= 1 bushel, 8 bushels=1 quarter; 16 drms=1 oz., 16 ozs.=1 lb., 1 cwt.=112 lbs., 1 ton= 20 cwt. (Full list page 1,134).

Greece.—The Greek "lepton" is the smallest coin now current in Europe. 100 lepta=1 drachma=1 franc=9½d.; livre=1.1 lbs., 1 ocque or oke=2.84 lbs., quintal=123.2 lbs., 1 mivái=3 3-10 lbs. about (3.30699 exact), 1 litra=1¾ pint about (1.761 exact), 1 pechus=1 yard 3⅓ inches.

Guatemala.—Money (see Mexico): 1 libra=1 lb. about, 25 libras=1 azumbre=25 lbs. 7 ozs., 4 cuartillas= 1 cantara=4¼ gallons, 1 fanega=1½ bushel.

Guernsey.—See Channel Islands.

Hayti. — Gourde (dollar) = 4/2; weights, English, but 8 per cent. heavier; measures, French.

Holland.—The Dutch currency consists of florins (gulden or guilder) and cents. The florin (1/8) contains 100 cents. The only gold coins now issued are pieces of 10 fl. (*goud tientje*). The silver coins are pieces of 2½ fl. (*rijksdaalder*), 1 fl. (*gulden*), ½ fl. (*tien stuiver*), ¼ fl. (*kwartje*), 1·10 fl. (*dubbeltje*). Copper coins are ½d (*halve stuiver*), 1·5d. (*cent*), and 1·10d. (*halve cent*). Weights and measures as in France. N.B.—Foreign money is taken at all the Dutch Railway Stations, Telegraph Offices, and the principal Hotels, Restaurants, and Cafes.

Hungary.—5 kreutzers=1 penny, 1 gulden=1/8; 1 vedro=2.7 gals.; 1 funt=.902 lbs.

India.—12 pies=1 anna=1½d., 16 annas=1 rupee=silver, 2/-, gold value, 1/2 to 1/6; 8 chittaks=½ seer =1¼ lbs., 5 seers=1 passeeree= =10 2/7 lbs., 8 passeerees=1 imp. maund=82 2-7 lbs.; 1 koonkee or chittak=45 feet square, 1 hauth=1 foot, 3 hauths=1 guz=1 yard, 1 seer =1¾ pint about (1.6457 exact), 1 maund=8¼ gallons about. The value of the maund, the unit of weight, varies in each of the Presidencies; thus the Madras maund = 25 lbs., Bombay maund = 28 lbs., Bengal maund=82 2-7 lbs.; so that 1,000 Bengal maunds = 2,938¾ Bombay maunds, and 3,291½ Madras maunds.

Ionian Islands.—English and Greek moneys, weights, and measures obtain at their native values.

Italy.—As in France; 100 cents = 1 lira=1 franc=9½d.; quintal=1.968 cwts.

Japan.—10 rin=1 sen, 100 sen= 1 yen=2/1, 100 cents=1 silver itzebue =1/7; 160 momme=1 kin or catty= 1⅓ lbs., 1 kwan=8.2817 lbs., 100 kin =1 picul=133⅓ lbs., 10 sung=1 shaku=12 inches about (11.954 exact), 1 ken=1.9884 yards, 1 tsubo=3.9538 sq. yards, 120,000 tsubo = 100 acres, 1 koh=11 cubic inches about (11.075 exact), or ¼ of a pint about (0.3195 exact), 1 sho=3 pints, 1 koku=6.409 cubic feet, or 39.7033 gals. (liquid), or 4.9629 bushels (dry), Ri=2.440 miles, sq. ri=5.9552 sq. miles, tcho (long measure)=5.4229 chains, tcho (land measure)=2.4507 acres.

Java.—100 centen=1 guilder or florin=1/8. (Note.—Average exchange of Dutch and Java money is in the proportion of seven Netherlands florins to eight Java ditto.) Chinese weights are in use, say, 100 catties= 1 picul=136 lbs.

Jersey and Guernsey.—See *Channel Islands.*

Madagascar.—English and French moneys are used, but are cut in pieces by the natives, and used according to weight in the following proportion—1 dollar=5 franc piece= 4/2; 1 monscha=6 6-10 lbs. about (6.6132 exact), satu=56 lbs., vata= 34 lbs., refe—measure of length—averages 60 inches, but varies according to locality.

Madeira.—10 reals or reis=½d., 200 reis=1 pistareen=10d.; 1 kilogramme=2 lbs. 3 oz., 1 arroba=32 lbs., 1 almude=4 gallons, 1 alqueire =⅛ of a bushel about (0.39 exact), 256 alqueires=100 bushels.

Malay (*Singapore and Strait Settlements*).—1 pie=½d., 10 pies=1 copang=5d., 10 copangs=1 dollar= 4/2; 100 catties=1 Malay picul=142¾ lbs., 1 bazaar maund=82½ lbs., 1 seer=2 lbs. 1 oz., 15 Malay catties =16 China catties, 4 chopas=1 ganton=1¼ gallon=6 17-100 cubic inches about, 1 jumba=12 square feet, 1 hasta or cubit=18 inches.

Malta.—1 caffiso=4½ impl. gallons.

Mauritius.—Same as Great Britain.

Mexico.—100 centavos = 1 peso = 1 Mex. dollar=4/3½ 16 piastres=1 doblon, real=6¼d., peso=4/3½d; 1 libra=1 lb. (about, 1.014 exact), 1 cantaro=3½ gallons (about, 3.552 exact).

Morocco.—1 okcat = 1½d., 1 once= 5 1-5d., 5 okats=1 ducat=7½d., real vellon=2½d., mitkal=4½d. (Spanish money is in general circulation); 20 ukiahs=1 rotl=1⅛ lbs. (about, 1.12 exact) (produce sold by the rotl of 1½ lbs.), 1 mahd =3 gallons about (3.08 exact), 1 kula=3½ gallons about, 1 fanega=

1¼ bushels, 1 tomin=2 4-5 inches, 1 cubit or canna=21 inches, 1 pic=26 inches.

Netherlands.—1 willems d'or=16/6¼ 1 ducat=9/4½, cent=1-5d., 100 cents=1 guilder or florin=1/8; 1 onze=1-5lb. about (0.220 exact), 10 onzen=1 pond =2 1-5 lbs., 1 palm=4 inches about (3.937 exact), 10 palmen=1 elle=39⅓ inches about (39.37 exact), 1,000 palmen cubic=1 elle=35½ cubic feet, 10 maatjen=1 kan=1¾ pints about (1.761 exact), 10 schepels=1 mud=2¾ bushels.

Norway.—1 skilling=4.9d., 24 skillings=100 ore=1 mark=1/1¼, 1 specie daler=4/5⅓, 1 riksdaler=120 skillings; 1 scaalpund=1 1-10 lbs. about (1.0981 exact), 1 pot=1-5 gallon about (0.2124 exact), 1 fod=1 3-100 feet about (1.294 exact), and as in France.

Paraguay.—1 peso=4/-

Persia.—50 dinas=1 shadi=5d., 20 shahis=1 khran=7d., 1 abas=10½d., 10 khrans=1 toman=9/3½d.,1 abushee =1/3, 1 silver rupee=1/6, 1 kran= 80 pf. or 9d.; 1 mân or tabree maund =6¾ lbs., tabree bazaar=6¼ lbs., copra maund=7¾ lbs., copra bazaar=7¼ to 7½ lbs., 1 shaman, or shaw maund =13½ lbs., 1 batman of Rahmetabad =17 lbs., royal guz or cubit=37½ inches, common guz=25 inches, artaba=2 qrs. (corn).

Peru.—10 centavos = 1 real, or di nero, 10 dineros=1 sol, 10 cents=1 real=4 6-10d., 10 reals=1 sole=3/10; 3 pies = 1 vara = 2¾ feet, fanega=1 bushel, arroba=25 lbs., quintal= 101½ lbs. (These are Spanish weights and measures; the French metrical system is also used.)

Philippines.—5 cents=1 real=2½d. 20 reals=1 dollar=4/2; libbra=1 lb., 15 taels=1 catty=1 4-10 lbs. about (1.395 exact), 25 libbras=1 arroba= 25 lbs., 4 arrobas=1 quintal= 101½ lbs.. 100 catties=1 picul= 139⅓ lbs. about (139.483 exact), 3 pies =1 vara=33⅜ inches.

Portugal.—1 real=1-20d., 20 reis= 1 1-12d., 4 testons=1 crusado, 2½ crusados=1 milrei, 1,000 reis= 1 milrei =4/5¼, silver teston=100 reis=1 tostao=4¾d., crown gold=10 milreis= 44/6. Weights and measures as in France.

Roumania. — 100 bani=1 ley=1 piastre=1 franc=9¾d. (Others as in France).

Rome.—1 scudo=10 bajocchi or 4/2.

Russia.—1 copek=¾d., 100 copeks= 1 gold rouble=3/2, 1 paper rouble= 2/-, 3 rouble gold piece=9/10, 1 imperial, gold=16/4½. (Leather money circulated in Russia so recently as the time of Peter the Great). Weights —40 funts=1 pood=36 lbs., 1 funt = 14⅓ oz., 1 new Russian pound = 409.512 gm., 1 berkovet=360 lbs., 1 garnitz=4-5 of a gallon, 1 vedro= 2.7 imp. gallons., 1 tchvert or chetvert = 5.7704 bushels, 1 versok = 1.75 inches, 1 arschine = 71.12 centimetres, 3 arschine or 1 fathom = 1 saschen, or sagen=7 feet, 500 saschens=1 verst= about ⅔ of a mile, or 5 furlongs 12 poles 2 feet, 1 sq. verst=0.44 of a sq. mile, 1 dessiatine=2.7 acres; 1 vedro= 2 7-10 gallons, 3 vedros=1 auker= 8 1-10 gallons about (8.115 exact).

Sandwich Islands—See *United States.*

Servia (as in France).—1 dinar=1 franc=9½d.

Siam.—64 atts=1 ticul=2/5, fuang =3¾d., salung=7½d.; 20 taels=1 catty =2⅔ lbs., 1 nin= 13-16 of an inch, 1 kam=4¼ inches, 1 sok=19¼ inches, 1 tinan=1½ pints, 1 tang=15 pints.

Sicily.—10 tari=1 Sicilian dollar= 3/4; Sicilian pound=12 oz., 100 Sicilian pounds=70 lbs., 1 cantar=1-13 of a ton; 1 cafisco=2⅔ gallons, 1 barile=7½ gallons.

Spain. — Centimo=1-10d., 100 centavos=1 peseta=9½d., 5 pesetas=2 escudos, or 1 douro, or 1 Spanish dollar, 20 reals vellon or 100 reals plate =1 piastre = 4/2. Weights and measures same as France (litre called litro; metre, metro, etc.); 1 frail of Malaga figs= 56 lbs., 1 frail of Faro figs=32 lbs., 1 quintal=100.9 lbs.; 9 cuartillos=1 gallon, 1 fanega=1.52 bushels, 1 fanegado=1 3-5 acres, 1 vara =34.1 inches.

Straits Settlements--1 dollar paper=2/-

Sweden.—1 ore=2-15d., 100 ore=1 riksdaler, krona, or crown=1/1½, 18

riksdaler = £1; 1 skalpund = 14 oz. 7 dr. 2 sc. 9 gr., 100 skalpund = 1 centner = 93 lbs. 11 oz., 1 tum = 1 inch, 1 fot = 1 foot (or 0.9741 inches exact), 1 square fot = 136 square inches; tunnland = 1.22 acres, kanna = 4.608 pints, tunna 4½ bushels; other weights and measures as in France.

Switzerland. — ame as in France.

Syria. — 1 piastre = 2d., 5½ piastres = 1/-; 400 drams = 1 oke = 2¾ lbs., 1 moke = 23 lbs., 1 kilo = 1 bushel.

Tonkin — silver piaster = 4/6.

Tripoli and Tunis — 40 paras = 1 piastre = 2½d., 20 piastres = mohbub = 4/2.; 1 rottola = 1 2-25 lbs., 2½ rottola = 1 oke = 2 7-10 lbs., 4 temens = 3 bushels (or 2.95 exact), 1 barile = 14 17-100 gallons.

Turkey — 3 asper = 1 para, 40 paras = 1 piastre = 2¼d., 100 piastres = 1 medjidie, or sequin, or yuslik, or Turkish pound, (£T1) = 18/0¾; 4 chequis = 1 oke = 2 2-5 lbs. (2.83 exact), 1 quintal = 125 lbs.; 8 arshin = 25⅝ inches, 1¼ kilos = 1 imperial quarter.

United Kingdom. — 1 penny = 2 American cents = 12 French centimes, 12 pence = 1/- = 24 cents = 1 franc 26 centimes, 20/- = 4 dollars, 80 cents = 25 francs, 20 centimes.

English and American.		French.
1 pound (lb)	= 453.5925	grammes.
1 pint	= 0.568	litres.
1 gallon	= 4.5435	,,
1 quart (grain)	= 1.1359	,,
1 bushel	= 36.3479	,,
1 quarter	= 2.90783	hectols.

United States. — 1 cent = ½d., 100 cents = 1 dollar = 4/2, 10 cents = 1 dime, 10 dimes = 1 dollar, 10 dollars gold = 1 gold eagle = 41/1, 1 double eagle = 20 dollars. The coins in use are 1 cent, 5 cents, 10 cents, 25 cents, 50 cents, and 100 cents. The western word "bit," is commonly used for 12½ cents, although there is no single coin of that amount. Originally a quarter or 25 cents was the smallest coin recognised, and subsequently the "bit," or half quarter, which never had a real existence, but singly in shops is taken as 10 cents, and in some places as 15, these being described as short and long bits respectively. At present the "nickel" (3 or 5 cents) is generally established as the minimum coin in the West, but coppers are very common in the East, and may soon become more popular in all the States. In the early mining days of California a bit of gold dust consisted of just as much as a bar-keeper could take between the tips of his thumb and first finger. The head of Liberty, which adorns the silver dollar issued by the United States Mint, is a reproduction of the features of a beautiful young school teacher of Philadelphia. Cental = 100 lbs., gallon (old English) = 0.883 of an impl. gallon, or 6 U.S. gallons = 5 impl. gallons, and a pint = 16 ozs.; bushel (Winchester) = 0.9694 of an impl. bushel, barrel of flour = 196 lbs., short ton = 2,000 lbs., long ton = 2,240 lbs., car load of fruit = 10 tons; others as in England.

Uruguay. — 10 centesimos = 1 peso fuerte = 4/1.

History of Weights and Measures. — Like our civilisation, our ideas of commerce, coinage, weights and measures came from the East. Measures are older than weights; the oldest we have record of is the cubit, of about 21 inches, and the digitus, of 8 inches. Weights were in use in Assyria of old 2,700 B.C. Those that have been found have been mostly in the ruins of temples —some were found in the temple of Artemis at Ephesus, indicating that the keepers of these sacred buildings kept the standards of weights and probably made the weights of the time. Briefly, the use of measures and weights travelled from Asia Minor by way of Egypt, Greece, and Rome, along the shores of the Mediterranean Sea, till, somewhere about 2,000 years since, they found their way into Britain either by trading or invasion. In those early days it must not be supposed that weights were used for weighing anything less valuable than precious metals, gems, or whatever was considered valuable at the time. Eatables, and the common necessaries of life,, were probably taken when wanted, each man

helping himself to what he desired. But notwithstanding invasions by Danes, Romans, and Normans, the population increased and collected in hamlets, and with community of interest "the old, old law, so dear to every man, that he shall take who has the power and he shall keep who can" had to give way to a better sentiment, and exchanging one thing for another—such as an armful of hay for a handful of corn—preceded the use of measures. Naturally, on looking about for something to serve the purpose of our forefathers, that which came most readily to hand would be used—for instance, the span of 9 in., the hand of 4 in. (used still in measuring horses), the foot of 12 in., which, if a human foot, indicates that there were giants in those days, and from the third to tenth century was over 13 in. There is the military pace of 30 in., then there is the load of a man, five bushels of wheat, and the load of a bullock, thirty-six trusses of hay or straw. We learn that as far back as 1342 three barleycorns shall go to the inch, and the smallest denomination of weight is a grain, probably of some seed. Up to the year 960 the standards were kept at Winchester, but the Normans then removed them to Westminster, and they were preserved in the Crypt of Edward the Confessor's Chapel. In the year 1266 it was enacted that an English penny shall weigh thirty-two wheatcorns from the middle of the ear, and twenty silver pennies shall make an ounce, and twelve ounces a pound; eight pounds shall be a gallon of wine, and eight gallons be a London bushel. The word "avoirdupois" (to have weight) was introduced in 1335. The foregoing were some of the simple methods used for ascertaining quantities in the earlier periods, which from time to time—as necessity arose, and according to the taste and fancy of different localities—were amplified and improved. Notwithstanding, there is still an elaborate system in existence that is not merely complex but cumbersome. We have the English (or standard) mile, the Scotch mile, the Irish mile, the nautical mile (or knot), all of different lengths. There is that troublesome measure the bushel, of which there are, according to good testimony, thirty different standards. In Cornwall 224 lbs. of potatoes go to the bushel, in Nottingham 84 lbs. only, and in other places considerably less. From the same authority we learn that no less than ten standards of the "stone" exist, varying from 5 lbs. in glass to 32 lbs. in hemp; and in London we know of two, viz., the 14 lbs. and 8 lbs. Then there is the quart reputed and imperial, and there is the anomaly of buying oats (and other corn) by the quarter of eight bushels, which shall weigh, either 204 or 220 lbs. A truss of hay is to weigh 56 lbs., but straw only 36 lbs., and a bushel of haricots is to weigh 63 lbs. for small and 56 lbs. for large, and both are sold by weight retail. There are numberless examples of eccentric differences in various localities. The goldsmiths, however, use a system in which neither the ounce nor the pound are the same weight as avoirdupois.

Modern Weights and Measures Acts.—Under these Acts every person who uses, or has in his possession for use, in trade, unjust weights or measures is liable to a fine not exceeding £5 for a first, or £20 for a second or subsequent offence, while sales made by means of the same become void. It may be pointed out that a defence, however true it may be, that such weights and measures were not actually in use, is seldom or never successful.

Any person fraudulently using any weight or measure, and any person party to such fraudulent use, will be liable to a maximum fine of £5 for a first offence, and £20 for a second or subsequent offence. In ad-

dition to, or in lieu of, these fines, terms of imprisonment, with or without hard labour, for any term not exceeding two months, may be enforced by the court. Any person refusing to produce his weights and measures for inspection by the proper officer, or refusing to allow them to be examined, or otherwise obstructing any inspector in carrying out his duties, shall be liable to a maximum fine of £5 for a first offence, and £10 for a second offence.

If a weight or measure has been duly stamped by an inspector, it is a legal weight or measure throughout the United Kingdom, unless found to be false or unjust, and need not be restamped if used in any place other than the one where originally stamped. A person using weights or measures in the City of London need not have them stamped by more than one authority.

In case of the conviction of any person under the Weights and Measures Acts, the court may, if it think fit, cause the conviction to be published in such manner as it thinks fit.

Every weighing instrument used for trade is required to be verified and stamped by an inspector of weights and measures, by a stamp of verification under the Act of 1889.

Imperial Weights and Measures.—According to the Weights and Measures Act, 1878:—"Assay of weights and measures" means the examination of these instruments by the appointed officers. The same weights and measures shall be used throughout the United Kingdom.

Measures of Capacity.—In using an imperial measure of capacity, the same shall not be heaped, but either shall be stricken with a round stick or roller, straight, and of same diameter from end to end, or if the article sold cannot, from its size or shape, be conveniently stricken, shall be filled in all parts as nearly to the level of the brim as the size and shape of the article will admit.

No local or customary measures, nor the use of the heaped measure shall be lawful. Any person who sells by any denomination of weight or measure other than one of the imperial weights or measures, or some multiple or part thereof, shall be liable to a fine not exceeding 40/- for every such sale.

Avoirdupois Weight.—All articles sold by weight shall be sold by avoirdupois weight; except that gold and silver, and articles made thereof, including gold and silver thread, lace, or fringe, also platinum, diamonds, and other precious metals or stones, may be sold by the ounce Troy, or by any decimal part of such ounce; and all contracts, bargains, sales, and dealings in relation thereto shall be deemed to be made and had by such weight, and when so made or had shall be valid.

Drugs, when sold by retail, may be sold by apothecaries' weight or by avoirdupois weight, but in dispensing apothecaries' weight is used. Every person who acts in contravention of this section shall be liable to a fine not exceeding £5.

Exceptions for Contracts, etc. in Metric Weight and Measures.—A contract or dealing shall not be invalid or open to objection on the ground that the weights or measures expressed or referred to therein are weights and measures of the metric system, or on the ground that decimal subdivisions of imperial weights, whether metric or otherwise, are used in such contract or dealing.

Nothing in this Act shall prevent the sale, or subject a person to a fine under this Act for the sale of any article in any vessel, where such vessel is not represented as containing any amount of imperial measure, nor subject a person to a fine under this Act for the possession of a vessel where it is shown that such vessel is not used nor intended for use as a measure. Many of the

weights and measures named in the following tables, although not in use, are often heard or read about.

Avoirdupois Weight.—27 11-32 grains=1 dram, 16 drams, or 437.5 grains=1 ounce (oz.), 16 ounces= 1 pound (lb.), 1 lb.=7,000 grains, 14 pounds=1 stone (st.), 28 lbs.= 1 quarter (qr.), 4 qrs.=1 cwt., 20 cwts.=1 ton. 100 lbs.=1 cental, 1 quintal=220.4 lbs., 100 oz. av.= 91 7-48 oz.Troy. 5 kilogrammes = 11 lbs., 1 kilogramme=2 lbs. 3 1-5 oz., 1 cwt.=50.80 kilos., 1 lb.=454 grams, 1 oz. = 28.35 grams. The Lanark Scotch stone=16 lbs., the Belfast stone (of flax)=16¾ lbs.

Useful Weights.—The following table will be found useful when it is desired to ascertain the weight of a letter or other article, and suitable weights are not at hand. The weight given is that of coins fairly worn; allowance must be made if those used be new or very old:—¼ oz. =halfpenny and threepenny piece, ⅓ oz.=1 penny piece, ½ oz.=florin and sixpence, 1 oz.= 3 pennies, 2 ozs=4 half-crowns and 1 shilling, 4 oz.=4 florins, 4 half-crowns, and 2½ pennies.

Troy Weight.—Various accounts are given of the origin of this system, but all differ, so it has become uncertain. They are:—

(1.) From Troyes, in France, an old commercial centre.

(2.) From "Trona," a beam to weigh with.

(3.) From the Norman word "trois" (three), the original weights being penny, shilling, and pound, or penny, ounce, and pound.

4.) From "droit pois" (right weight).

24 grains (gr.)=1 pennyweight (dwt.), 480 grs.=20 dwts.=1 ounce (oz.), 5,760 grs.=240 dwts.=12 oz.= 1 pound (lb.),100 lbs. Troy=1 cwt, 100 oz. Troy=190 5-7 oz. avoirdupois.

Diamond and Pearl Weight.—16 parts=1 grain=0.8 troy grain, 4 grains=1 carat=3.2 Troy grains, 151½ carats=1 oz. Troy. Carat weight is an instance of an ancient Arab weight; being formerly known as "Karact" and "Caract" weight. The gold carat is an imaginary weight. (The "grain" is an old English unit of weight which was ordained by statute in 1266 to be the weight of a well-dried grain of wheat from the middle of the ear.)

Apothecaries' Weights and Measures (supposed to be of Grecian or Arabic origin.)—20 grains or minims =1 scruple (℈), 3 scruples=1 drachm (ʒ), 8 drachms=1 ounce (℥).

(Apothecaries still compound their medicines by this weight, but buy and sell their drugs by avoirdupois, as ordered in the British Pharmacopœia of 1867.)

60 minims=1 fluid drachm, 2 drachms=1 teaspoonful, 3 drachms= 1 dessertspoonful, 4 drachms=1 tablespoonful, 2 fluid ounces=1 wineglassful, 4 fluid ounces=1 tea-cupful, 8 fluid ounces=1 breakfastcupful, 8 fluid ounces=1 tumblerful, 20 fluid ounces=1 pint, 8 pints=1 gallon.

Dry Measure.—2 pints=1 quart, 2 quarts=1 pottle, 4 quarts=1 gallon, 2 gallons=1 peck, 8 gallons= 1 bushel, 3 bushels=1 sack (of potatoes, fruit, etc.), 12 sacks=32 bushels=1 chaldron, 8 bushels=1 quarter, 2 bushels= 1 strike, 4 bushels=1 coomb (or sack of wheat), 6 bushels=1 boll of barley, 5 quarters=1 wey or load, 10 quarters =1 last, boll of meal=140 lbs., and 2 bolls=1 sack. The standard bushel is 18½ inches diameter inside and 8¼ inches deep; it holds 80 pounds of distilled water at 60 deg. F. This measure is applied to corn, seeds, roots, etc., which are struck with a straight line.

NOTE.—A bushel of potatoes in Cornwall is sold as 224 lbs., whilst in Nottingham it is only 84 lbs.; peck of apples 16 lbs., potatoes 20 lbs., and pears 18 lbs.; a Worcestershire "pot" 4 pecks, but in several other counties it varies from 64 to 94 lbs.

In one part of Gloucestershire a bushel of corn = 62 lbs., in Monmouthshire 70 lbs., and in Newtown 80 lbs.

The heaped imperial bushel, as used for coal, fruit, potatoes, etc., must be an upright cylinder of which the diameter is not less than twice its depth, and the height of the conical heap must be at least three-quarters of the depth of the bushel, the outside of the measure being the boundary of the base of the cone.

Imperial measure was introduced in 1824, in place of the old Winchester gallon (so called because the standard bushel was ordered by King Edgar to be kept there) of 272½ cubic inches. Old Winchester bushel = 2150.4 cubic inches. Old wine gallon = 231 cubic inches, old ale gallon = 282 cubic inches.

Liquid Measure.—4 gills = 1 pint, 2 pints = 1 quart, 4 quarts = 1 gallon, 9 gallons = 1 firkin, 10 gallons = 1 anker, 12½ gallons = 1 quarter cask (vinegar, etc.), 2 firkins or 18 gallons = 1 kilderkin or runlet, 36 gallons = 1 barrel, 42 gallons = 1 tierce, 54 gallons or 1½ barrels = 1 hogshead of ale, 72 gallons (wine 63 gallons) = 1 puncheon of ale, 108 gallons or 3 barrels = 1 butt of ale, 2 hogsheads = 1 pipe, 2 pipes = 1 tun, 1 pipe wine = 126 gallons, 50 gallons = 1 hogshead vinegar. (In America, a hogshead of spirits or molasses = 110 to 120 wine gallons, and a pint = 16 ozs.) 1 litre = about 1¾ pints; 1 quart = 1 litre and 13 centilitres; 1 hectolitre = 100 litres = 22 gallons. (See metric system, p. 1,139).

The gallon is = 277¼ cubic inches, or 0.16 cubic feet, and contains 10 lbs. of distilled water, or 9⅓ lbs of vinegar; 1 pint = 20 fluid ounces.

Circular Measure.—The diameter of a circle is a straight line passing through the centre from opposite parts of the circumference or perimeter.—The radius is half the diameter, or a straight line from the centre to the circumference.—The diameter is to the circumference about as 7 is to 22, or more nearly as 1 is to 3.1416.—The diameter × 3.1416 gives the circumference.—The radius squared by 3.1416 gives the area.—The diameter squared by 3.1416 gives the area of a sphere or globe.—One-sixth of the cube of the diameter × by 3.1416 gives the solidity of a sphere. 1 circular foot = 113.097 square inches, 1 conical foot = 452.39 cubic inches.

Wine Measure. (*See Wines*).

Wool Weight.—7 pounds = 1 clove (cl.), 2 cloves = 1 stone (st.), 2 stones = 1 tod (td.), 6½ tods = 1 wey (wy.), 2 weys = 1 sack (sk.), 12 sacks = 1 last (la.), 240 pounds = 1 pack (pk.)

Long or **Lineal Measure.**—6 points = 1 line, 4 lines = 1 barleycorn, 3 barleycorns = 1 inch, 3 inches = 1 palm, 4 inches = 1 hand (as applied to horses), 7.92 inches = 1 link, 9 inches = 1 span, 12 inches = 1 foot (supposed length of the human foot), 18 inches = 1 cubit, 2½ feet = 1 pace or step (military), 2 steps = 1 geometrical pace, 3 feet = 1 yard (of Saxon origin), 2 yards = 1 fathom (supposed length of the arms from finger tips), 120 fathoms = 1 cable, 450 feet = 1 log-line (navy), 1 nautical knot or mile = 6,082½ feet, 1 Admiralty knot = 6,080 feet, 5½ yards = 1 rod, perch, or pole, 4 poles, or 100 links, or 66 feet = 1 chain, 40 rods or 220 yards = 1 furlong, 8 furlongs, or 1,760 yards = 1 mile (Imperial), 3 miles = 1 league, 69½ miles (statute) = 1 degree (°), 360 geographical degrees = the circumference of the earth, 1.150 Imperial miles = 1 geographical or nautical mile, 60 geographical miles = 1 degree, 1 metre = 39.37 inches, 1 yard = 91½ centimetres. The origin of foot measure was the length of a human foot, which must have been much larger than the modern size, the digit—a finger's breadth, the inch, the breadth of the thumb, the "nail"—from tip to middle joint of the longest finger, the palm—as measured

across the middle joints of the four fingers, the hand—clasped with the thumb uppermost was fixed by 27 Henry VIII. c. 6, at 4 ins. in measuring horses; the span — thumb and little finger extended to the uttermost, the cubit—from the elbow to the extremity of the middle finger, nominally 18 inches; the step = 2½ feet, the pace=two steps.

Bread and Flour Weights and Measures.—See *Bread*, p. 140; also *Flour*, p. 378.

Cloth Measure.—2¼ inches=1 nail, 4½ inches=1 eighth yard, 4 nails=1 quarter yard, 18 ins.=1 half yard, 36 ins. 1 yard, a Flemish ell=¾ yard, an English ell=1¼ yards, a French ell=1½ yards.

Solid or Cubic Measure.—1 gram =1 cubic centimetre (c.c.), 16.38 cubic centimetres=1 cubic inch, 1,728 cubic inches=1 cubic foot, 452.39 cubic inches=1 conical foot, 27 cubic feet=1 cubic yard, 108 cubic feet=1 stack of wood, 128 cubic feet=1 cord of wood, 40 feet unhewn or 50 feet hewn timber=1 ton, 40 cubic feet=1 ton of shipping, 5 cubic feet =1 barrel bulk.

A ton weight of the following will average in cubic feet:—Earth, 21; clay, 18; chalk, 14; Thames ballast, 20; coarse gravel, 19; pit sand, 22; river ditto, 19; marl, 18; shingle, 23; night soil, 18.

Square Measure.—144 square inches=1 square foot, 9 square feet =1 square yard, 100 square feet=1 square flooring, 272¼ feet=1 rod (brick), 30¼ square yards=1 square pole, rod, perch, or lug, 16 square poles=1 square chain; 40 rods, poles, or perches=1 rood, 4 roods or 10 chains=1 acre,, 160 rods or 4,840 yards=1 acre, 640 acres=1 square mile.

A hide of land=100 acres, a barony of land = 40 hides, a Yard of land = 30 acres.

Each side of a square acre is 69.57 yards.

NUMERATION TABLE.

4	...	Units.
34	...	Tens.
634	...	Hundreds.
8,634	...	Thousands.
98 634	...	Tens of thousands.
198,634	...	Hundreds of thousands.
5,198,634	...	Millions.
25,198,634	...	Tens of millions
325,198,634	...	Hundreds of millions.

THE ROMAN NOTATION TABLE.

1	I.	11	XI.	25	XXV.	300	CCC.
2	II.	12	XII.	30	XXX	400	CD.
3	III.	13	XIII.	40	XL.	500	D.
4	IV.	14	XIV.	50	L.	600	DC.
5	V.	15	XV	60	LX	700	DCC.
6	VI.	16	XVI.	70	LXX.	800	DCCC.
7	VII	17	XVII.	80	LXXX	900	CM.
8	VIII.	18	XVIII.	96	XC.	1000	M.
9	IX.	19	XIX	100	C.	1800	MD.
10	X	20	XX.	200	CC	1902	MCMII.

Acre.—Up to the fourteenth century, an acre was "as much as a yoke of oxen could plow in a day."

The standard, imperial, or statute acre as known in England and America since the Act 5 of Geo. IV., cap. 74, has been 4 roods, equal to 160 rods, poles, lugs, or perches, or 4,840 square yards. Previously the size of acres differed much in various districts:—

The Cheshire acre was 10,240 sq. yards, the Cornish 5,760, the Devonshire 4,000, the Herefordshire 3,226¾ yards.

The Irish acre continues to be 7,840, the Lancashire was also 7,840, the Leicestershire 2,308¾ sq. yards.

The Scotch acre remains 6,150 2-5 yards, 48 Scotch acres being equal to 61 statute acres.

A Welsh acre is just double a statute acre; and the Wiltshire 3,630.

Capacity of Boxes.—The following table will often be found convenient, taking inside dimensions.

A box 8 2-5 in. by 8 in., and 8 in. deep, will contain a peck; 8 in. square, and 2¾ in. deep, will contain a half gallon; 4 in. square, and 4 1-5 in. deep,

will contain a quart; 3 in. square, and 3½ in. deep, will contain a pint; 24 in. by 17 in., and 28 in. deep, will contain a barrel; 13½ in. square, and 11½ in. deep, will contain a bushel; 12 in. by 11½ in. and 9 in. deep, will contain a half bushel; 10 in. square, and 10¾ in. deep, will contain a half bushel.

Cisterns.—1 cubic foot=6¼ gallons of water.

Miscellaneous Weights. Measures, and Commercial Numbers (approximate Computations)-Bag of biscuits (Admiralty)=102 lbs., cocoa =112 lbs., coffee=140 to 168 lbs., Brazils=160 lbs., ginger=112 lbs., hops=280 lbs., walnuts=50 lbs., pepper corns (black)=316 lbs., pepper corns (white)=168 lbs., rice (East India)=168 lbs., sago=112 lbs., saltpetre (East India)=168 lbs., sugar= 224 lbs.

Bale of feathers=1 cwt., cotton (U.S.A. and Egyptian)=about 450 lbs., cotton (East Indian)=380 lbs., (Brazil)=180 lbs., Irish bacon=3 to 6 cwt.

Barrel of American apples=150 lbs., American flour=196 lbs., anchovies= 30lbs., beer=36 gallons=350 lbs. nett, butter=4 firkins or 224 lbs., coffee=112 to 168 lbs., figs=96 to 360 lbs., fish (Norway)=1,000 in number, barrel of grapes=48 lbs., gunpowder 100 lbs., herrings=26¾ gallons, lard =333 lbs., raisins112 lbs., soft soap= 256 lbs., tar=25 gallons, turpentine= 244 to 280 lbs., American petroleum= 42 Winchester gallons, treacle=3 cwts., pork=224 lbs.

Basket of almonds=1¼ c. to 1½c.

Box of almonds=25 lbs., fish=about 90 lbs., bacon, hams=5 cwt. to 6 cwt., raisins=56 lbs., (Malaga) 22 lbs., (Valencia) 26 lbs., sugar candy=30 lbs. (See also p. 902).

Bucket of lard=28 lbs.

Bundle of paper=4 reams.

Bushel of apples=50 lbs., wheat= 60 lbs., oats=35 to 40 lbs., oysters= 100 lbs., barley=47 lbs., salt=56 lbs.

Chain =66 feet.

Cade of herrings=500, sprats=1,000, 20 cades=1 cwt.

Calendar Month =28, 29, 30, or 31 days.

Car-load (U.S.A. fruit)=10 tons. (Salmon) 430 cases, or 30,000 lbs.

Carotel of currants=5 c. to 9 c.

Carton of plums=9 lbs.

Case of currants=140 lbs.

Casks (see p. 1,105 and 1,135).

Cental =100 lbs.

Choppin (Scotch) = the French "Chopine," or the German and Swiss "Schoppen."

Clove of cheese=8 lbs.

Cord of wood=128 cubic feet.

Cornish acre =5,760 square yards.

Cran of fish=37½ gallons.

Dicker of gloves=10 dozen pairs, dicker of skins=10 skins.

Dozens. –We generally suppose that the dozen means twelve. It does in most cases; but in some businesses the dozen is a very different matter. For instance, the baker's or the publisher's and newsvendor's dozen is thirteen or more. In some kinds of fish twenty-six are termed a dozen, while there is a still bigger trouble in the pottery trade, where the dozen would appear to be fixed by caprice, or according to the size or value of the article. Anything from two to fifty comes within the meaning of the word. Size and weight of articles all control the dozen. Jugs, bottles, plates, and similar articles have all, according to the makers, a variety in "going to the dozen."

Faggot of steel=120 lbs.

Firkin of butter=56 lbs to 96 lbs., firkin of soft soap=64 lbs.

Fodder or *Fother* =a load, or ton of lead (Derby)=22½ cwt., ditto (London and Hull=19½ cwt., ditto (Newcastle=21½ cwt. (usually about 2,400 lbs).

Forpit (Scotch) of grain or meal ¼ of a peck.

Gallon of flour = 7 lbs., bread = 8 lbs., water=10 lbs.,

Great gross =12 gross, Great hundred=6 score, gross=12 dozen, long gross=156.

Guinea =21/- (see p. 1064).

Hand (cattle measure)=4 inches.
Hank of cotton=7 skeins, or 840 yards.
Hide of land=100 acres.
Hod of bricks=20.
Hogshead =52½ imperial gallons or ½ a pipe, hogshead of tobacco=12 to 18 cwt.
Kanter of gum=19¼ cwt.
Keel of coals=8 Chaldrons=21 1-5 tons.
Last of codfish, herrings, etc.=12 barrels, last of corn=10 quarters=80 bushels, last of feathers=17 cwt., last of gunpowder=24 barrels or 2,400 lbs., last of hides=20 dickers.
Line =one-twelfth of an inch.
Load of bricks=500, load of new hay=36 trusses of 60 lbs., load of old hay=36 of 56 lbs., load of straw=1,296 lbs., load of plain tiles=1,000, load of rough timber (unhewn)=40 cubic feet, load of rough timber (hewn)=50 cubic feet.
Long dozen =13 articles, long gross =156 articles, long hundred=6 score (nails, tacks, etc.). (see Dozens).
Lunar Month =28 days.
Noggin =¼ pint.
Pace or Step =2½ feet in length.
Pack of wool=240 lbs.
Pail of lard=28 lbs.
Peck of flour or salt=14 lbs.
Perch =(English) 5½ yards, (Irish) 7½ yards.
Piece of wall paper=12 yards.
Pig of ballast=56 lbs.
Pocket of hops=1½ to 2 cwt.
Pottle =½ gallon.
A Poke, or large sack, of bran=8 bushels.
Puncheon of treacle=12 cwts.
Pot =1 quart.
Quartern loaf =4 lbs.
Quintal =220.4 lbs.
Quintal of fish=100 lbs.
Quir of paper=24 sheets.
Ream of paper=20 quires, ream of printer's paper=516 sheets (4 reams=1 bundle). A folio ream is a printer's ream of 80 quires.
Roll of vellum=5 dozen, or 60 skins.
Runlet, or rundlet = a cask of 18 gallons.
Sack.—A sack of apples, or other fruit or vegetables, 3 bushels. bread or bran = 6 bushels, coals = 224 lbs. or 3 bushels, 12 sacks — 1 chaldron, sack of coke=3 bushels, sack of corn (since 1870)=4 imperial bushels, dari=480 lbs., flour=280 lbs.=5 bushels, lentils=504 lbs., oats=4 bushels, peas=504 lbs., potatoes=168 lbs. or 3 bushels, salt=5 bushels, wheat=4 bushels, wool=354 lbs.
Seam of glass=24 st. of 5 lbs., or 120 lbs.
Sheet of paper folded into 2 leaves termed folio size, into 4 leaves termed 4to (or quarto), into 8 leaves termed 8vo (or octavo), into 12 leaves termed 12mo (or duodecimo), into 16 leaves termed 16mo, into 18 leaves termed 18mo, into 24 leaves termed 24mo, into 48 leaves termed 48mo.
Shipping ton (merchandise)=40 cubic feet, shipping ton (timber)=42 cubic feet.
Skein of cotton=120 yards.
Solar year=365 days 5 hours 48 minutes and 49 seconds.
Span =9 inches.
Stack of wood=108 cubic feet.
Stone of butcher's meat (in London) =8 lbs., stone of glass=5 lbs., hemp=32 lbs. Lanark (Scotch) stone=16 lbs. Belfast stone of flax=16¾ lbs.
Tapnet of figs=28 lbs.
Tierce.—From French *tiers*, (three), hence a measure equal to a third part of a pipe—a liquid measure=42 wine gallons=⅓ of a pipe=35 imperial gallons, beef for the navy=304 lbs., beef for India=336 lbs., sugar and rice, intermediate between a barrel and a hogshead.
Truss of new hay (to Sept. 1)=60 lbs., old hay = 56 lbs., straw=36 lbs.. 36 trusses=1 load.
Weigh of cheese=256 lbs.
Weight (potatoes, etc., Ireland)=21 lbs.

(For Weights and measures of other fruits, vegetables, etc., see pages 436 to 438.)

Metric System.—The *metric system* of dividing by tenths is in use in thirty-six countries of the world by 450 millions of people. The system was enforced in France in 1840 and was adopted in Germany much

more recently (1870). The theory of the metric system is that a metre is the ten-millionth part of the quadrant of the earth through Paris; the litre is a cube of one-tenth of a metre, and the gramme is one-thousandth part of a litre filled with water at a temperature of 4 deg. centigrade. A silver franc (10d.) weighs five grammes. Seventeen nations of Europe have adopted this method, and contribute to the support of the Metric Bureau in Paris, where the standards have been preserved for mutual benefit since 1840. Supposing in this country the system were adopted, and were to approximate as nearly to the Continental idea as we can without throwing overboard our fundamental principles, we should no doubt keep to the sovereign, and the ton, and the mile, dividing them differently to what we do at present. It is something like this at present we divide our numerals:—

1,000 by 10 to 100, by 100 to 10, by 1,000 to 1 the unit.

Our sovereign by 20 to a shilling, by 240 to a 1d., by 960 to a farthing.

Our ton by 20 to a cwt., by 80 to a qtr., by 2,240 to a lb.

Our mile by 8 to a furlong, by 80 to a chain, by 1,760 to a yard.

If we used the decimal system the figures would read that the sovereign, ton, and mile would equal 1,000:—

Divide sovereign by 10 to the Deci-sov. (or florin, 2s.), by 100 to Centi-sov., 2¼d., by 1,000 to Milli-sov., or farthing.

Divide ton by 10 to the Deci-ton (2 cwt.), by 100 to the Centi-ton, 22½ lb., by 1,000 to Milli-ton, 2¼ lb.

Divide mile by 10 to a Deci-mile (176 yds.), y 100 to the Centi-mile, 17⅗ yds., by 1,000 to Milli-mile, 1¾ yards.

Measures of Length.— The unit is the metre=39., 37 *inches.*

Metric Terms.	Metres.		Yards.	Inches.
Centimetre =	$\frac{1}{100}$	=	0	0·39
Decimetre =	$\frac{1}{10}$	=	0	3·93
Metre =	1	=	1	3·37
Decametre =	10	=	10	33·70
Hectometre =	100	=	109	13·08
Kilometre =	10030	=	1093	22·30

Square Measure. —The square metre contains:—

100 Square Decimetres.
10,000 ,, Centimetres.
1,000,000 ,, Millimetres.

In surface measure for fields, woods, etc., the unit is the Are.

1 Are=100 sq. metres, or 119.6033 sq. yards.

Hectare=100 ares=2.47 acres.

Centiare=1-100 of an are=1.196 sq. yards.

Measure for Wine, Oil, Wheat, Apples, etc.—

The Unit is the Litre=1.76077 pints.

The Decalitre = 10 litres.
,, Hectolitre = 100 ,,
,, Kilolitre = 1,000 ,,
,, Decilitre = 1-10 of a litre.
,, Centilitre = 1-100 ,,
,, Millilitre = 1-1000 ,,

The Litre=1 Cubic Decimetre.

A litre of distilled water weighs 1 Kilogramme.

Measure of Solidity for Masonry, Capacity of Docks, etc.—The Unit is the Cubic Metre, which contains:—

1,000 cubic Decimetres.
1,000,000 ,, Centimetres.
1,000,000,000 ,, Millimetres.

c.c., or ccm.=cubic centimetre.

Measure of Solidity for Firewood, Ropes, Dye-woods, etc.—

The Unit is the Stere=1 cub. yd. 8.31655 cub. ft.

The Decastere=10 steres.
,, Decistere=1-10 of a stere.
,, Stere=1 Cubic Metre.

The Unit of *Weight* is the Gramme =.56438 drams.

The Decagramme=10 grammes
,, Hectogramme=100 grammes.
,, Kilogramme=1,000 grammes.
,, Myriagramme=10 kilogrammes.

The Metric Quintal = 100 kilogrammes.
,, Millier = 1,000 kilogrammes.
,, Decigramme = 1-10 of a gramme.
,, Centigramme = 1-100 of a gramme.
,, Milligramme = 1-1000 of a gramme.

A Cubic Centimetre of distilled water at 39½ deg. F. weighs 1 gramme in a vacuum.

Kilogrammes into Cwts., Qrs., Lbs., Ozs :—

Kilos		cwts.	qrs.	lbs.	ozs.
1	=	0	0	2	3¼
2	=	0	0	4	6½
3	=	0	0	6	9¾
4	=	0	0	8	13
5	=	0	0	11	0¼
6	=	0	0	13	3½
7	=	0	0	15	7
8	=	0	0	17	10¼
9	=	0	0	19	13½
10	=	0	0	22	0¾
20	=	0	1	16	1½
30	=	0	2	10	2½
40	=	0	3	4	3
50	=	0	3	26	3¾
60	=	1	0	20	4½
70	=	1	1	14	5¼
80	=	1	2	8	6
90	=	1	3	2	6½
100	=	1	3	24	7
200	=	3	3	20	14
500	=	9	3	10	3
1000	=	19	2	20	6

Note.—To convert grammes to ounces avoirdupois, multiply by 20 and divide by 567. To convert kilogrammes to pounds, multiply by 1,000 and divide by 454. To convert litres to gallons, multiply by 22 and divide by 100. To convert litres to pints, multiply by 88 and divide by 50. To convert millimetres to inches, multiply by 10 and divide by 254. To convert metres to yards, multiply by 70 and divide by 64.

Adulteration and the Food and Drugs Acts.—The most cursory glance through the preceding pages will probably convince most people how utterly hopeless it is for a retailer to guarantee the strict purity of such a host of commodities. In dealing with the multifarious articles connected with his trade, the grocer has in truth very serious difficulties to encounter. In a large number of articles there is no definite line between the legally genuine and the illegally adulterated samples, and there is also a third class, namely, specimens of inferior quality but not of necessity adulterated. In the case of natural products it seems that the latter class must always exist, but it is in respect of the doubtful cases that some understanding is specially required. Of course, in the case of articles distinctly good or distinctly bad, there is little or no difficulty in deciding, but a dividing line between the three classes above mentioned should be drawn more distinctly than at present, and for this purpose the retailer should be informed as to the average composition of the genuine articles, and also the composition of articles not of the highest quality but still of proved genuineness.

We have, however, very few standards, no legalised standards at all except in the case of spirits, and in the case of a few articles of food where the limits adopted by the Inland Revenue authorities are known (as in the case of milk) and are probably recognised by most manufacturers.

In the early days of the Society of Public Analysts, certain other standards were proposed which dealt with milk, cocoa, vinegar, mustard, and a few other articles, but at the present day some of the standards then agreed on would not find general acceptance.

In addition to the question of the composition of articles, the names and definitions of many substances deserve attention, as a very slight change of description in the article sold may result in its composition being entirely different. To show the need of standards, we may consider the following questions:—

What is really the composition of the ordinary articles in every-day use which we should consider as satisfactory evidence of their genuineness? Or, in other words, what limits are we to place on the various substances which are determined by analysis? To take bread, how much water is to be allowed? Or cocoa, how much fat ought there to be in it, or need there be any at all? Or, in the case of vinegar, how much acetic acid and burnt sugar should there be? Or in mustard, should we have a limit depending on the amount of fixed oil or of what?

It is obvious that in the case of almost every article of food there are important questions to be answered which are at present unsettled.

Butter, as regards foreign fats, excess of water, salt, or preservatives? *Caper Tea*, its insoluble mineral matter, ash, and volatile oil? *Ground Cayenne* its origin, and its starchy and mineral matters?

Cheese requires stricter definition with regard to the milk whey, fat, colourings, and other extraneous matters.

Jams, marmalades and *jellies as* to glucose.

Cloves as to excess of mineral matter, exhausted particles, moisture, ash, etc.

Condensed Milk as to deficiencies of butter-fat, and excess of sugar, glucose, water, etc.

Sugar and *Golden Syrup* as to their origin, and as to glucose.

Flour, as to excess of water, ash, starch, or freedom from alum, husk, etc.

Ginger, Honey, Spices, Tinned Meats and Fruits, and scores of other articles might be mentioned which, were there legal standards adopted without further delay, would be a great convenience to both traders and consumers.

The retailer is often unfairly trapped through being asked for articles under vague or equivocal names. He must not be considered dishonest because his Cream of tartar contains no cream; his Milk of sulphur, no milk; his Sugar of lead, no sugar; his Lavender water, no water; his Spirits of salts, no alcohol.

The following Parliamentary enactments, if carefully read over occasionally, may help both masters, managers, and shopmen to steer clear of many pitfalls.

Laws or sections which have been made and repealed are omitted.

SALE OF FOOD AND DRUGS ACT 1875.—38 *and* 39 *Vic. Ch.* 36, *Section* 2.—The term "drug" shall i.o. include medicine for internal or external use.

The term "county" shall include every county, riding, and division, as well as every county of a city or town not being a borough:

The term "justices" shall include any police and stipendiary magistrate invested with the powers of a justice of the peace in England, and any divisional justices in Ireland.

3. No person shall mix, colour, stain, or powder, or order or permit any other person to mix, colour, stain, or powder, any article of food with any ingredient or material so as to render the article injurious to health, with intent that the same may be sold in that state, and no person shall sell any such article so mixed, coloured, stained, or powdered, under a penalty in each case not exceeding fifty pounds for the first offence; every offence, after a conviction for a first offence, shall be a misdemeanour, for which the person, on conviction, shall be imprisoned for a period not exceeding six months with hard labour.

4. No person shall, except for the purpose of compounding as hereinafter described, mix, colour, stain, or powder, or order or permit any other person to mix, colour, stain, or powder, any drug with any ingredient or material so as to affect injuriously the quality or potency of such drug, with intent that the same may be sold

in that state, and no person shall sell any such drug so mixed, coloured, stained, or powdered, under the same penalty in each case respectively as in the preceding section for a first and subsequent offence.

5. Provided that no person shall be liable to be convicted under either of the two last foregoing sections of this Act in respect of the sale of any article of food or of any drug, if he shows to the satisfaction of the justice or court before whom he is charged that he did not know of the article of food or drug sold by him being so mixed, coloured, stained, or powdered as in either of those sections mentioned, and that he could not with reasonable diligence have obtained that knowledge.

6. No person shall sell to the prejudice of the purchaser any article of food or any drug which is not of the nature, substance, and quality of the article demanded by such purchaser, under a penalty not exceeding twenty pounds; provided that an offence shall not be deemed to be committed under this section in the following cases; that is to say,

(1.) Where any matter or ingredient not injurious to health has been added to the food or drug because the same is required for the production or preparation thereof as an article of commerce, in a state fit for carriage or consumption and not fraudulently to increase the bulk, weight, or measure of the food or drug, or conceal the inferior quality thereof;

(2.) Where the drug or food is a proprietary medicine, or is the subject of a patent in force, and is supplied in the state required by the specification of the patent;

(3.) Where the food or drug is compounded as in this Act mentioned;

(4.) Where the food or drug is unavoidably mixed with some extraneous matter in the process of collection or preparation.

7. No person shall sell any compound article of food or compounded drug which is not composed of ingredients in accordance with the demand of the purchaser, under a penalty not exceeding twenty pounds.

8. Provided that no person shall be guilty of any such offence as aforesaid in respect of the sale of an article of food or a drug mixed with any matter or ingredient not injurious to health, and not intended fraudulently to increase its bulk, weight, or measure, or conceal its inferior quality, if at the time of delivering such article or drug he shall supply to the person receiving the same a notice, by a label distinctly and legibly written or printed on or with the article or drug, to the effect that the same is mixed.

9. No person shall, with the intent that the same may be sold in its altered state without notice, abstract from an article of food any part of it so as to affect injuriously its quality, substance, or nature, and no person shall sell any article so altered without making disclosure of the alteration, under a penalty in each case not exceeding twenty pounds.

12. Any purchaser of an article of food or of a drug in any place being a district, county, city, or borough where there is any analyst appointed under this or any Act hereby repealed shall be entitled on payment of a sum not exceeding ten shillings and sixpence, or if there be no such analyst then acting for such place, to the analyst of another place, of such sum as may be agreed upon between such person and the analyst, to have such article analysed by such analyst, and to receive from him a certificate of the result of his analysis.

14. The person purchasing any article with the intention of submitting the same to analysis shall, after the purchase shall have been completed, forthwith notify to the seller or his agent selling the article his intention to have the same analysed by a public analyst, and shall divide the article into three parts to be then and there separated, and each part to be marked and sealed or fastened up in such manner as its nature will permit, and shall, if re-

quired to do so, deliver one of the parts to the seller or his agent.

He shall afterwards retain one of the said parts for future comparison and submit the third part, if he deems it right to have the article analysed, to the analyst.

17. If any such officer, inspector, or constable, as above described, shall apply to purchase any article of food or any drug exposed to sale, or on sale by retail on any premises or in any shop or stores, and shall tender the price for the quantity which he shall require for the purpose of analysis, not being more than shall be reasonably requisite, and the person exposing the same for sale shall refuse to sell the same to such officer, inspector, or constable, such person shall be liable to a penalty not exceeding ten pounds.

18. The certificate of the analysis shall be in the form set forth in the schedule hereto, or to the like effect.

20. When the analyst having analysed any article shall have given his certificate of the result from which it may appear that an offence against some one of the provisions of this Act has been committed, the person causing the analysis to be made may take proceedings for the recovery of the penalty herein imposed for such offence, before any justices in petty sessions assembled having jurisdiction in the place where the article or drug sold was actually delivered to the purchaser, in a summary manner.

21. At the hearing of the information in such proceeding the production of the certificate of the analyst shall be sufficient evidence of the facts therein stated, unless the defendant shall require that the analyst shall be called as a witness, and the parts of the articles retained by the person who purchased the article shall be produced, and the defendant may, if he think fit, tender himself and his wife to be examined on his behalf, and he or she shall, if he so desire, be examined accordingly.

22. The justices before whom any complaint may be made, or the Court before whom any appeal may be heard, under this Act may, upon the request of either party, in their discretion cause any article of food or drug to be sent to the Commissioners of Inland Revenue, who shall thereupon direct the chemical officers of their department at Somerset House to make the analysis, and give a certificate to such justices of the result of the analysis; and the expense of such analysis shall be paid by the complainant or the defendant as the justices may by order direct.

23. Any person who has been convicted of any offence punishable by any Act hereby repealed or by this Act by any justices may appeal in England to the next general or quarter sessions of the peace which shall be held for the city, county, town, or place wherein such conviction shall have been made, provided that such person enter into a recognizance within three days next after such conviction, with two sufficient sureties, conditioned to try such appeal, and to be forthcoming to abide the judgment and determination of the Court at such general or quarter sessions, and to pay such costs as shall be by such Court awarded; and the justices before whom such conviction shall be had are hereby empowered and required to take such recognizance; and the Court at such general or quarter session are hereby required to hear and determine the matter of such appeal, and may award such costs to the party appealing or appealed against as they or he shall think proper.

In Ireland any person who has been convicted of any offence punishable by this Act may appeal to the next court or quarter sessions to be held in the same division of the county wnere the conviction shall be made by any justice or justices in any petty sessions district, or to the recorder at his next sessions where the conviction shall be made by the divisional justices in the police district of Dublin metropolis, or to the recorder of any corporate or borough town when the conviction shall be made by any justice or justices in such corporate or borough town (unless when any such sessions

shall commence within ten days from the date of any such conviction, in which case if the appellant sees fit, the appeal may be made to the next succeeding sessions to be held for such division or town), and it shall be lawful for such court of quarter sessions or recorder (as the case may be) to decide such appeal, if made in such form and manner and with such notices as are required by the Petty Sessions Acts respectively herein-before mentioned as to appeals against orders made by justices at petty sessions, and all the provisions of the said Petty Sessions Acts respectively as to making appeals and as to executing the orders made on appeal, or the original orders where the appeals shall not be duly prosecuted, shall also apply to any appeal made under this Act.

24. In any prosecution under this Act, where the fact of an article having been sold in a mixed state has been proved if the defendant shall desire to rely upon any exception or provision contained in this Act, it shall be incumbent upon him to prove the same.

25. If the defendant in any prosecution under this Act prove to the satisfaction of the justices or court that he had purchased the article in question as the same in nature, substance, and quality as that demanded of him by the prosecutor, and with a written warranty to that effect that he had no reason to believe at the time when he sold it that the article was otherwise, and that he sold it in the same state as when he purchased it he shall be discharged from the prosecution, but shall be liable to pay the costs incurred by the prosecutor, unless he shall have given due notice to him that he will rely on the above defence.

27. Any person who shall forge, or shall utter, knowing it to be forged for the purposes of this Act, any certificate or any writing purporting to contain a warranty, shall be guilty of a misdemeanor and be punishable on conviction by imprisonment for a term of not exceeding two years with hard labour.

Every person who shall wilfully apply to an article of food, or a drug, in any proceedings under this Act, a certificate or warranty given in relation to any other article or drug, shall be guilty of an offence under this Act, and be liable to a penalty not exceeding twenty pounds.

And every person who shall wilfully give a label with any article sold by him which shall falsely describe the article sold, shall be guilty of an offence under this Act, and be liable to a penalty not exceeding twenty pounds.

28. Nothing in this Act contained shall affect the power of proceeding by indictment, or take away any other remedy against any offender under this Act, or in any way interfere with contracts and bargains between individuals, and the rights and remedies belonging thereto.

Provided that in any action brought by any person for a breach of contract on the sale of any article of food or of any drug, such person may recover alone or in addition to any other damages recoverable by him the amount of any penalty in which he may have been convicted under this Act, together with the costs paid by him upon such conviction and those incurred by him in and about his defence thereto, if he prove that the article or drug the subject of such conviction was sold to him as and for an article or drug of the same nature, substance, and quality as that which was demanded of him, and that he purchased it not knowing it to be otherwise, and afterwards sold it in the same state in which he purchased it; the defendant in such action being nevertheless at liberty to prove that the conviction was wrongful, or that the amount of costs awarded or claimed was unreasonable.

30. *Special Provisions as to Tea.*—From and after the first day of January, one thousand eight hundred and seventy-six, all tea imported as merchandise into and landed at any port in Great Britain or Ireland shall be subject to examination by persons to be appointed by the Com-

missioners of Customs, subject to the approval of the Treasury, for the inspection and analysis thereof, for which purpose samples may, when deemed necessary by such inspectors, be taken and with all convenient speed be examined by the analysts to be so appointed; and if upon such analysis the same shall be found to be mixed with other substances or exhausted tea the same shall not be delivered unless with the sanction of the said Commissioners, and on such terms and conditions as they shall see fit to direct, either for home consumption or for use as ships' stores or for exportation; but if on such inspection and analysis it shall appear that such tea is in the opinion of the analyst unfit for human food, the same shall be forfeited and destroyed or otherwise disposed of in such manner as the said commissioners may direct.

31. Tea to which the term "exhausted" is applied in this Act shall mean and include any tea which has been deprived of its proper quality, strength, or virtue by steeping, infusion, decoction, or other means.

FORM OF CERTIFICATE (See Section 18).

To*

I, the undersigned, public analyst for the do hereby certify that I received on the day of 18 , from† , a sample of for analysis (which then weighed‡), and have analysed the same, and declare the result of my analysis to be as follows:—

I am of opinion that the same is a sample of genuine

or,

I am of opinion that the said sample contained the parts as under, or the percentages of foreign ingredients as under.

Observations.§

As witness my hand this day of . A.B., at

* Here insert the name of the person submitting the article for analysis.

† Here insert the name of the person delivering the sample.

‡ When the article cannot be conveniently weighed, this passage may be erased, or the blank may be left unfilled.

§ Here the analyst may insert, at his discretion his opinion as to whether the mixture (if any) was for the purpose of rendering the article portable or palatable, or of preserving it, or of improving the appearance, or was unavoidable, and may state whether in excess of what is ordinary, or otherwise, and whether the ingredients or materials mixed are or are not injurious to health.

In the case of a certificate regarding milk, butter, or any article liable to decomposition, the analyst shall specially report whether any change had taken place in the constitution of the article that would interfere with the analysis.

Sale of Food and Drugs Act, Amendment Act 1879, 42 *and* 43 *Vic. ch.* 30.—*Section* 2. In any prosecution under the provisions of the principal Act (1875) for selling to the prejudice of the purchaser any article of food or any drug which is not of the nature, substance, and quality of the article demanded by such purchaser, it shall be no defence to any such prosecution to allege that the purchaser, having bought only for analysis, was not prejudiced by such sale. Neither shall it be a good defence to prove that the article of food or drug in question, though defective in nature or in substance or in quality, was not defective in all three respects.

3. Any medical officer of health, inspector of nuisances, or inspector of weights and measures, or any inspector of a market, or any police constable under the direction and at the cost of the local authority appointing such officer, inspector, or constable, or charged with the execution of this Act, may procure at the place of delivery any sample of any milk in course of delivery to the purchaser or consignee

in pursuance of any contract for the sale to such purchaser or consignee of such milk; and such officer, inspector, or constable, if he suspect the same to have been sold contrary to any of the provisions of the principal Act, shall submit the same to be analysed, and the same shall be analysed, and proceedings shall be taken, and penalties on conviction be enforced in like manner in all respects as if such officer, inspector, or constable had purchased the same from the seller or consignor under section thirteen of the principal Act.

4. The seller or consignor or any person or persons entrusted by him for the time being with the charge of such milk, if he shall refuse to allow such officer, inspector, or constable to take the quantity which such officer inspector, or constable shall require for the purpose of analysis, shall be liable to a penalty not exceeding ten pounds.

5. Any street or open place of public resort shall be held to come within the meaning of section seventeen of the principal Act.

6. In determining whether an offence has been committed under section six of the said Act by selling, to the prejudice of the purchaser, spirits not adulterated otherwise than by the admixture of water, it shall be a good defence to prove that such admixture has not reduced the spirit more than twenty-five degrees under proof for brandy, whisky, or rum, or thirty-five degrees under proof for gin.

Margarine Act, 1877, 50 *and* 51 *Vict., Ch.* 29.—*Section* 3. The word "butter" shall mean the substance usually known as butter, made exclusively from milk or cream, or both, with or without salt or other preservative, and with or without the addition of colouring matter.

The word "margarine" shall mean all substances, whether compounds or otherwise, prepared in imitation of butter, and whether mixed with butter or not, and no such substance shall be lawfully sold, except under the name of margarine, and under the cond tions set forth in this Act.

4. Every person dealing in ma garine, whether wholesale or reta whether a manufacturer, importer, as consignor or consignee, or as cor mission agent or otherwise, who found guilty of an offence under th Act, shall be liable on summary co viction for the first offence to a fi not exceeding twenty pounds, and f the second offence to a fine not e ceeding fifty pounds, and for the thi or any subsequent offence to a fine n exceeding one hundred pounds.

5. Where an employer is charge with an offence against this Act h shall be entitled, upon informatio duly laid by him, to have any oth person whom he charges as the actu offender brought before the Court the time appointed for hearing th charge, and if, after the commission the offence has been proved, the em ployer proves to the satisfaction of th Court that he had used due diligenc to enforce the execution of this Ac and that the said other person ha committed the offence in questio without his knowledge, consent, connivance, the said other person sha be summarily convicted of suc offence, and the employer shall be e empt from any penalty.

6. Every person dealing in ma garine in the manner described i the preceding section shall conform the following regulations:—

Every package, whether open closed, and containing margarin shall be branded or durably marke "Margarine" on the top, bottom, an sides, in printed capital letters, n less than three-quarters of an inc square; and if such margarine be e posed for sale by retail, there shall b attached to each parcel thereof so e posed, and in such manner as to b clearly visible to the purchaser, label marked in printed capital lette not less than one and a-half inch square, "Margarine"; and every pe son selling margarine by retail, sa in a package duly branded or durab marked as aforesaid, shall in every ca deliver the same to the purchaser

a paper wrapper, on which shall be printed in capital letters "Margarine."

7. Every person dealing with, selling, or exposing, or offering for sale, or having in his possession for the purpose of sale, any quantity of margarine contrary to the provisions of this Act, shall be liable to conviction for an offence against this Act, unless he shows to the satisfaction of the court before whom he is charged that he purchased the article in question as butter, and with a written warranty or invoice to that effect, that he had no reason to believe at the time when he sold it that the article was other than butter, and that he sold it in the same state as when he purchased it, and in such case he shall be discharged from the prosecution, but shall be liable to pay the costs incurred by the prosecutor unless he shall have given due notice to him that he will rely upon the above defence.

8. All margarine imported into the United Kingdom of Great Britain and Ireland, and all margarine whether imported or manufactured within the United Kingdom of Great Britain and Ireland, shall, whenever forwarded by any public conveyance, be duly consigned as margarine; and it shall be lawful for any officer of Her Majesty's Customs or Inland Revenue, or any medical officer of health, inspector of nuisances, or police constable, authorised under section thirteen of the Sale of Food and Drugs Act, 1875, to procure samples for analysis if he shall have reason to believe that the provisions of this Act are infringed on this behalf, to examine and take samples from any package, and ascertain, if necessary by submitting the same to be analysed, whether an offence against this Act has been committed.

9.. Every manufactory of margarine within the United Kingdom of Great Britain and Ireland shall be registered by the owner or occupier thereof with the local authority from time to time in such manner as the Local Government Boards of England and Ireland and the Secretary for Scotland respectively may direct, and every such owner or occupier carrying on such manufacture in a manufactory not duly registered shall be guilty of an offence under this Act.

10. Any officer authorised to take samples under the Sale of Food and Drugs Act, 1875, may, without going through the form of purchase provided by that Act, but otherwise acting in all respects in accordance with the provisions of the said Act as to dealing with samples, take for the purposes of analysis samples of any butter, or substances purporting to be butter, which are exposed for sale, and are not marked Margarine, as provided by this Act; and any such substance not being so marked shall be presumed to be exposed for sale as butter.

11. Any part of any penalty recovered under this Act may, if the court shall so direct, be paid to the person who proceeds for the same, to reimburse him for the legal costs of obtaining the analysis, and any other reasonable expenses to which the court shall consider him entitled.

12. All proceedings under this Act shall, save as expressly varied by this Act, be the same as prescribed by sections twelve to twenty-eight inclusive of the Sale of Food and Drugs Act, 1875, and all officers employed under that Act are hereby empowered and required to carry out the provisions of this Act.

Sale of Food and Drugs Act, 1899, 62 and 63 Vict. Ch. 51. — Section 1.—(1.) If there is imported into the United Kingdom any of the following articles, namely:—

(A) margarine or margarine cheese, except in packages conspicuously marked "Margarine" or "Margarine-cheese," as the case may require; or

(B) adulterated or impoverished butter (other than margarine) or adulterated or impoverished milk or cream, except in packages or cans conspicuously marked with a name or description indicating that the butter or milk or cream has been so treated; or

(C) condensed separated or skimmed

milk, except in tins or other receptacles which bear a label whereon the words "Machine-skimmed Milk" or "Skimmed Milk," as the case may require, are printed in large and legible type: or

(D) any adulterated or impoverished article of food to which Her Majesty may by Order in Council direct that this section shall be applied, unless the same be imported in packages or receptacles conspicuously marked with a name or description indicating that the article has been so treated;

the importer shall be liable, on summary conviction, for the first offence to a fine not exceeding twenty pounds, for the second offence to a fine not exceeding fifty pounds, and for any subsequent offence to a fine not exceeding one hundred pounds.

(2.) The word "importer" shall include any person who, whether as owner, consignor, or consignee, agent, or broker, is in possession of, or in anywise entitled to the custody or control of, the article; prosecutions for offences under this section shall be undertaken by the Commissioners of Customs; and subject to the provisions of this Act this section shall have effect as if it were part of the Customs Consolidation Act, 1876.

(3.) The Commissioners of Customs shall, in accordance with directions given by the Treasury after consultation with the Board of Agriculture, take such samples of consignments of imported articles of food as may be necessary for the enforcement of the foregoing provisions of this section.

(4.) Where the Commissioners of Customs take a sample of any consignment in pursuance of such directions they shall divide it into not less than three parts, and send one part to the importer and one part to the principal chemist of the Government laboratories, and retain one part.

(5.) In any proceeding under this section the certificate of the principal chemist of the result of the analysis shall be sufficient evidence of the facts therein stated, unless the defendant require that the person who made the analysis be called as a witness.

(6.) If, in any case the Commissioners of Customs are of opinion that an offence against this section has been committed, they shall communicate to the Board of Agriculture for their information the name of the importer and such other facts as they possess or may obtain as to the destination of the consignment.

(7.) For the purposes of this section an article of food shall be deemed to be adulterated or impoverished if it has been mixed with any other substance, or if any part of it has been abstracted so as in either case to affect injuriously its quality, substance, or nature.

Provided that an article of food shall not be deemed to be adulterated by reason only of the addition of any preservative of colouring matter of such a nature and in such quantity as not to render the article injurious to health.

2.—(1.) The Local Government Board may, in relation to any matter appearing to that Board to affect the general interest of the consumer, and the Board of Agriculture may, in relation to any matter appearing to that Board to affect the general interests of agriculture in the United Kingdom, direct an officer of the Board to procure for analysis samples of any article of food, and thereupon the officer shall have all the powers of procuring samples conferred by the Sale of Food and Drugs Acts, and those Acts shall apply as if the officer were an officer authorised to procure samples under the Sale of Food and Drugs Act, 1875, except that—

(A) The officer procuring the sample shall divide the same into four parts, and shall deal with three of such parts in the manner directed by section fourteen of the Sale of Food and Drugs Act, 1875, as amended by this Act, and shall send the fourth part to the Board, and

(B) the fee for analysis shall be payable to the analyst by the local

authority of the place where the sample is procured.

(2.) The Board shall communicate the result of the analysis of any such sample to the local authority, and thereupon there shall be the like duty and power on the part of the local authority to cause proceedings to be taken as if the local authority had caused the analysis to be made.

3.—(1.) It shall be the duty of every local authority entrusted with the execution of the laws relating to the sale of food and drugs to appoint a public analyst, and put in force from time to time, as occasion may arise, the powers with which they are invested, so as to provide proper securities for the sale of food and drugs in a pure and genuine condition, and in particular to direct their officers to take samples for analysis.

(2.) If the Local Government Board or Board of Agriculture, after communication with a local authority, are of opinion that the local authority have failed to execute or enforce any of the provisions of the Sale of Food and Drugs Acts in relation to any article of food, and that their failure affects the general interest of the consumer or the general interests of agriculture in the United Kingdom, as the case may be, the Board concerned may, by order, empower an officer of the Board to execute and enforce those provisions or to procure the execution and enforcement thereof in relation to any article of food mentioned in the order.

(3.) The expenses incurred by the Board or their officer under any such order shall be treated as expenses incurred by the local authority in the execution of the said Acts, and shall be paid by the local authority to the Board on demand, and in default the Board may recover the amount of the expenses with costs from the local authority.

(4.) For the purposes of this section an order of the Board shall be conclusive in respect of any default, amount of expenses, or other matter therein stated or appearing.

(5.) Any public analyst appointed under the Sale of Food and Drugs Acts shall furnish such proof of competency as may from time to time be required by regulation framed by the Local Government Board.

4.—(1.) The Board of Agriculture may, after such inquiry as they deem necessary, make regulations for determining what deficiency in any of the normal constituents of genuine milk, cream, butter or cheese, or what addition of extraneous matter or proportion of water, in any sample of milk (including condensed milk), cream, butter, or cheese, shall for the purposes of the Sale of Food and Drugs Acts raise a presumption, until the contrary is proved, that the milk, cream, butter, or cheese is not genuine, or is injurious to health, and an analyst shall have regard to such regulations in certifying the result of an analysis under those Acts.

(2.) Any regulations made under this section shall be notified in the London and Edinburgh Gazettes, and shall also be made known in such other manner as the Board of Agriculture may direct.

5. The provisions of the Margarine Act, 1887, as amended by this Act, shall extend to margarine-cheese and shall apply accordingly, with the substitution of "margarine-cheese" and "cheese" for "margarine" and "butter," and provided that all margarine-cheese sold or dealt in otherwise than by retail shall either be inclosed in packages marked in accordance with the Margarine Act, 1887, as amended by this Act, or be itself conspicuously branded with the words "margarine-cheese."

6.—(1.) Where under this Act or the Margarine Act, 1887, it is required that any package containing margarine or margarine-cheese shall be branded or marked, the brand or mark shall be on the package itself and not solely on a label, ticket, or other thing attached thereto.

(2.) The letters required to be printed on the paper wrapper in which margarine or margarine-cheese is sold shall be capital block letters not less than half an inch long and distinctly

legible, and no other printed matter shall appear on the wrapper.

(3.) The words "or with" in section six of the Margarine Act, 1887, shall be repealed.

7.—(1.) Every occupier of a manufactory of margarine or margarine-cheese, and every wholesale dealer in such substances, shall keep a register showing the quantity and destination of each consignment of such substances sent out from his manufactory or place of business, and this register shall be open to the inspection of any officer of the Board of Agriculture.

(2.) Any officer of the Board of Agriculture shall have power to enter at all reasonable times any manufactory of margarine or margarine-cheese, and to inspect any process of manufacture therein, and to take samples for analysis.

(3.) If any such occupier or dealer—

(A) fails to keep such a register, or

(B) refuses to produce the register when required to do so by an officer of the Board of Agriculture, or

(C) fails to keep the register posted up to date, or

(D) wilfully makes any entry in the register which is false in any particular, or

(E) fraudulently omits to enter any particular which ought to be entered in the register.

he shall be liable on summary conviction for the first offence to a fine not exceeding ten pounds, and for any subsequent offence to a fine not exceeding fifty pounds.

(4.) The provisions of section nine of the Margarine Act, 1887, relating to registration of manufactories shall extend to any premises wherein the business of a wholesale dealer in margarine or margarine-cheese is carried on.

(5.) The registration of a manufactory or other premises shall be forthwith notified by the local authority to the Board of Agriculture.

8. It shall be unlawful to manufacture, sell, expose for sale, or import any margarine, the fat of which contains more than ten pen cent. of butter fat, and every person who manufactures, sells, exposes for sale, or imports any margarine which contains more than that percentage, shall be guilty of an offence under the Margarine Act, 1887, and any defence which would be a defence under section seven of that Act shall be a defence under this section, and the provisions of the former section shall apply accordingly.

9. Every person who, himself or by his servant, in any highway or place of public resort sells milk or cream from a vehicle or from a can or other receptacle shall have conspicuously inscribed on the vehicle or receptacle his name and address, and in default shall be liable on summary conviction to a fine not exceeding two pounds.

10. In the case of a sample taken of milk in course of delivery, or of margarine or margarine-cheese forwarded by a public conveyance, the person taking the sample shall forward by registered parcel or otherwise a portion of the sample marked, and sealed, or fastened up, to the consignor if his name and address appear on the can or package containing the article sampled.

11. Every tin or other receptacle containing condensed separated or skimmed milk must bear a label clearly visible to the purchaser on which the words "Machine-skimmed Milk," or "Skimmed Milk," as the case may require, are printed in large and legible type, and if any person sells or exposes or offers for sale condensed separated or skimmed milk in contravention of this section he shall be liable on summary conviction to a fine not exceeding ten pounds.

12. The label referred to in section eight of the Sale of Food and Drugs Act, 1875, shall not be deemed to be distinctly and legibly written or printed within the meaning of that section unless it is so written or printed that the notice of mixture given by the label is not obscured by other matter on the label; Provided that nothing in this enactment shall hinder or affect the use of any registered trade mark, or of any label which

has been continuously in use for at least seven years before the commencement of this Act; but the Comptroller-General of Patents, Designs, and Trade Marks shall not register any trade mark purporting to describe a mixture unless it complies with the requirements of this enactment.

13. In section fourteen of the Sale of Food and Drugs Act, 1875, the words "offer to" and the words "proceed accordingly and shall," shall be repealed.

14. The provisions of section three and section four of the Sale of Food and Drugs Act Amendment Act, 1879 (relating to the taking of samples of milk in course of delivery), shall apply to every other article of food: Provided that no samples shall be taken under this section except upon the request or with the consent of the purchaser or consignee.

16. Any person who wilfully obstructs or impedes any inspector or other officer in the course of his duties under the sale of Food and Drugs Acts, or by any gratuity, bribe, promise, or other inducement prevents, or attempts to prevent, the due execution by such inspector or officer of his duty under those Acts, shall be liable, on summary conviction, for the first offence to a fine not exceeding twenty pounds, for the second offence to a fine not exceeding fifty pounds, and for any subsequent offence to a fine not exceeding one hundred pounds.

17.—(1.) Where, under any provision of the Sale of Food and Drugs Act, 1875, a person guilty of an offence is liable to a fine which may extend to twenty pounds as a maximum, he shall be liable for a second offence under the same provision to a fine not exceeding fifty pounds, and for any subsequent offence to a fine not exceeding one hundred pounds.

(2.) Where, under any provision of the Sale of Food and Drugs Acts, a person guilty of an offence is liable to a fine exceeding fifty pounds, and the offence, in the opinion of the court, was committed by the personal act, default, or culpable negligence of the person accused, that person shall be liable (if the court is of opinion that a fine will not meet the circumstances of the case) to imprisonment, with or without hard labour, for a period not exceeding three months.

18. Notwithstanding anything in section seventeen of the Sale of Food and Drugs Act, 1875, where any article of food or drug is exposed for sale in an unopened tin or packet duly labelled, no person shall be required to sell it except in the unopened tin or packet in which it is contained.

19.—(1.) When any article of food or drug has been purchased from any person for test purposes, any prosecution under the Sale of Food and Drugs Acts in respect of the sale thereof, notwithstanding anything contained in section twenty of the Sale of Food and Drugs Act, 1875, shall not be instituted after the expiration of twenty-eight days from the time of the purchase.

(2.) In any prosecution under the Sale of Food and Drugs Acts the summons shall state particulars of the offence or offences alleged, and also the name of the prosecutor, and shall not be made returnable in less time than fourteen days from the day on which it is served, and there must be served therewith a copy of any analyst's certificate obtained on behalf of the prosecutor.

20.—(1.) A warranty or invoice shall not be available as a defence to any proceeding under the Sale of Food and Drugs Acts unless the defendant has, within seven days after service of the summons, sent to the purchaser a copy of such warranty or invoice with a written notice stating that he intends to rely on the warranty or invoice, and specifying the name and address of the person from whom he received it, and has also sent a like notice of his intention to such person.

(2.) The person by whom such warranty or invoice is alleged to have been given shall be entitled to appear at the hearing and to give evi-

dence, and the court may, if it thinks fit, adjourn the hearing to enable him to do so.

(3.) A warranty or invoice given by a person resident outside the United Kingdom shall not be available as a defence to any proceeding under the Sale of Food and Drugs Acts, unless the defendant proves that he had taken reasonable steps to ascertain and did in fact believe in the accuracy of the statement contained in the warranty or invoice.

(4.) Where the defendant is a servant of the person who purchased the article under a warranty or invoice he shall, subject to the provisions of this section, be entitled to rely on section twenty-five of the Sale of Food and Drugs Act, 1875, and section seven of the Margarine Act, 1887, in the same way as his employer or master would have been entitled to do if he had been the defendant, provided that the servant further proves that he had no reason to believe that the article was otherwise than that demanded by the prosecutor.

(5.) Where the defendant in a prosecution under the Sale of Food and Drugs Acts has been discharged under the provisions of section twenty-five of the Sale of Food and Drugs Act, 1875, as amended by this Act, any proceedings under the Sale of Food and Drugs Acts for giving the warranty relied on by the defendant in such prosecution, may be taken as well before a court having jurisdiction in the place where the article of food or drug to which the warranty relates was purchased for analysis as before a court having jurisdiction in the place where the warranty was given.

(6.) Every person who, in respect of an article of food or drug sold by him as principal or agent, gives to the purchaser a false warranty in writing, shall be liable on summary conviction, for the first offence, to a fine not exceeding twenty pounds, for the second offence to a fine not exceeding fifty pounds, and for any subsequent offence to a fine not exceeding one hundred pounds, unless he proves to the satisfaction of the court that when he gave the warranty he had reason to believe that the statements or descriptions contained therein were true.

21. The justices or court referred to in section twenty-two of the Sale of Food and Drugs Act, 1875, shall on the request of either party under that section cause an article of food or drug to be sent to the Commissioners of Inland Revenue for analysis, and may, if they think fit, do so without any such request.

22.—(1.) At the hearing of the information in any proceeding under the Sale of Food and Drugs Acts, the production by the defendant of a certificate of analysis by a public analyst in the form prescribed in section eighteen of the Sale of Food and Drugs Act, 1875, shall be sufficient evidence of the facts therein stated, unless the prosecutor requires that the analyst be called as a witness.

(2.) A copy of every such certificate shall be sent to the prosecutor at least three clear days before the return day, and if it be not so sent the court may, if it thinks fit, adjourn the hearing on such terms as may seem proper.

23. This Act shall apply to Scotland with the substitution for "the Local Government Board" of "the Local Government Board for Scotland," and all powers and duties vested in or imposed on the Secretary for Scotland in relation to the Sale of Food and Drugs Acts shall be transferred to, vested in, or imposed on the Local Government Board for Scotland.

24. This Act shall apply to Ireland with the substitution for "the Board of Agriculture" of "the Department of Agriculture and Technical Instruction for Ireland," and for "the Local Government Board" of "the Local Government Board for Ireland," and for "the London and Edinburgh Gazettes" of "the Dublin Gazette."

25. In this Act, unless the context otherwise requires—

The expression "margarine-cheese" means any substance whether compound or other-

wise, which is prepared in imitation of cheese, and which contains fat not derived from milk:

The expression "cheese" means the substance usually known as cheese, containing no fat derived otherwise than from milk:

The expression "local authority" means any local authority authorised to appoint an analyst for the purposes of the Sale of Food and Drugs Acts, and the expression "public analyst" means an analyst so appointed.

Other expressions have the same meaning as in the Sale of Food and Drugs Acts, and an offence under this Act shall be treated as an offence under those Acts.

26. For the purposes of the Sale of Food and Drugs Acts the expression "food" shall include every article used for food or drink by man, other than drugs or water, and any article which ordinarily enters into or is used in the composition or preparation of human food; and shall also include flavouring matters and condiments.

The Merchandise Marks Act, 1887—This Act is intended to provide that all goods should be properly designated, but it is very imperfect. To interpret it literally, Banbury cakes should be made only at Banbury, Bath bricks only at Bath, Epsom salts only at Epsom, Everton toffee only in Everton, Pontefract juice and cakes only at Pontefract, Yorkshire pudding only in Yorkshire. This was, of course, never intended; but that when an article is described as being composed of a certain substance, it should consist of that substance. Smoked American bacon must not be sold as Wiltshire, nor rolled American as Irish.

Clause 2 of the Act says:—(1.) Every person who (*a*) forges any trade mark, or (*b*) falsely applies to goods any trade mark or any mark so nearly resembling a trade mark as to be calculated to deceive, or (*c*) makes any die, block, machine, or other instrument for the purpose of forging or of being used for forging a trade mark, or (*d*) *applies any false description to goods*, or (*e*) disposes of or has in his possession any die, block, machine, or other instrument for the purpose of forging a trade mark, or (*f*) causes any of the things above in this section mentioned to be done, shall, subject to the provisions of this Act, and unless he proves that he acted without intent to defraud, be guilty of an offence against this Act. (2) Every person who sells, or exposes for, or has in his possession for, sale, or any purpose of trade or manufacture, any goods or things to which any forged trade mark or false trade description is applied, or to which any trade mark or mark so nearly resembling a trade mark as to be calculated to deceive is falsely applied, as the case may be, shall, unless he proves (*a*) that having taken all reasonable precautions against committing an offence against this Act, he had at the time of the commission of the alleged offence no reason to suspect the genuineness of the trade mark, mark, or trade description, and (*b*) that on demand made by or on behalf of the prosecutor he gave all the information in his power with respect to the persons from whom he obtained such goods or things, or (*c*) that otherwise he had acted innocently, he be guilty of an offence against this Act.

Penalties.—(3.) Every person guilty of an offence against this Act shall be liable (i.) on conviction on indictment to imprisonment, with or without hard labour, for a term not exceeding two years, or to a fine, or to both imprisonment and fine; and (ii.) on summary conviction to imprisonment, with or without hard labour, for a term not exceeding four months, or to a fine not exceeding £20, and in the case of a second or subsequent conviction to imprisonment, with or without hard labour, for a term not exceeding six months, or to a fine not exceeding £50; and (iii.) in any case to forfeit to Her Majesty every

chattel, article, instrument, or thing by means of or in relation to which the offence has been committed.

Clause 3. *Definitions* :—The expression "trade mark" means a mark registered under the Act, 1883, and includes any trade mark protected by law in any British possession or foreign State to which the provisions of the 103rd section of that Act are under order in council, for the time being applicable. The expression "trade description." means any description, statement, or other indication, direct or indirect—(*a*) as to the number, quantity, measure, gauge, or weight of any goods; or (*b*) as to the *place or country* in which any goods *were made* or produced; or (*c*) as to the mode of manufacturing or producing any goods; or (*d*) as to the *material* of which any goods are composed; or (*e*) as to any goods being the subject of an existing *patent* privilege of copyright; and the use of any figure, word, or mark which, according to the custom of the trade, is commonly taken to be an indication of any of the above matters, shall be deemed to be a trade description within the meaning of this Act. The expression "false trade description" means a trade description which is false in a material respect as regards the goods to which it is applied, and includes every alteration of a trade description, whether by addition, effacement, or otherwise, where that alteration makes the description false in a material respect. The provisions of this Act respecting the application of a false trade description to goods shall extend to the application to goods of any such figures, words, or marks, or arrangement, or combination thereof, whether including a trade mark or not, as are reasonably calculated to lead persons to believe that the goods are the manufacture or merchandise of some person other than the person whose manufacture or merchandise they really are, and shall also extend to the application of any false name or initials of a person, in like manner as if such name or initials were a trade description, and also to the name or initials of a fictitious person or of some person not *bonâ-fida* carrying on business in connection with such goods.

Clause 5.—A trade mark, mark, or trade description shall be deemed to be applied, whether it is woven, impressed, or otherwise worked into, or annexed or affixed to the goods, or to any covering, label, or any other thing.

Clause 10.—In the case of imported goods, evidence of the port of shipment shall be *primâ-facie* evidence of the place or country in which the goods were made or produced.

Clause 12.—Where, upon information of an offence against this Act, a justice has issued either a summons requiring the defendant charged by such information to appear to answer to the same, or a warrant for the arrest of such defendant, and either the said justice on or after issuing the summons or warrant, or any other justice is satisfied, by information on oath, that there is reasonable cause to suspect that any goods or things, by means of or in relation to which such offence has been committed, are in any house or premises of the defendant, or otherwise in his possession, or under his control in any place, such justice may issue a warrant under his hand by virtue of which it shall be lawful for any constable named or referred to in the warrant to enter such house, premises, or place at any reasonable time by day, and to search there for, and seize and take away, those goods or things; and any goods or things seized under such warrant shall be brought before a court of summary jurisdiction for the purpose of its being determined whether the same are or are not liable to forfeiture under this Act.

Clause 16.—All such goods and also all goods of foreign manufacture bearing any name or trade mark being or purporting to be the name or trade mark of any manufacturer, dealer, or trader in the United Kingdom, unless such name or trade mark is accompanied by a definite indica-

tion of the place or country where such goods were made or produced, are hereby prohibited to be imported into the United Kingdom, and, subject to the provisions of this section, shall be included among goods prohibited to be imported as if they were specified in Section 42 of the Customs Consolidation Act, 1876.

Clause 17.—On the sale or in the contract for the sale of any goods to which a trade mark, mark, or trade description has been applied, the vendor shall be deemed to warrant that the mark is a genuine trade mark and not forged or falsely applied, or that the trade description is not a false trade description within the meaning of this Act, unless the contrary is expressed in some writing signed by or on behalf of the vendor, and delivered at the time of sale or contract to, and accepted by, the vendee.

Clause 18.—Where, at the passing of this Act, a trade description is lawfully and generally applied to goods of a particular class, or manufactured by a particular method, to indicate the particular class or method of manufacture of such goods, the provisions of this Act with respect to false trade description shall not apply to such trade description when so applied: provided, that where such trade description includes the name of a place or country, and is calculated to mislead as to the place or country where the goods to which it is applied were actually made or produced, and the goods are not actually made or produced in that place or country, this section shall not apply, unless there is added to the trade description, immediately before or after the name of that place or country, in an equally conspicuous manner with that name, the name of the place or country in which the goods were actually made or produced, with a statement that they were made or produced there.

An amending Act of 1891 enacts:—

Clause 1. The Customs entry relating to imported goods shall, for the purposes of the Merchandise Marks Act, 1887, be deemed to be a trade description applied to the goods.

Clause 2.—(1.) The Board of Trade may, with the concurrence of the Lord Chancellor, make regulations providing that in cases appearing to the Board to affect the general interests of the country, or of a section of the community, or of a trade, the prosecution of offences under the Merchandise Marks Act, 1887, shall be undertaken by the Board of Trade, and prescribing the conditions on which such prosecutions are to be so undertaken. The expenses of prosecutions so undertaken shall be paid out of moneys provided by Parliament.

(2.) All regulations made under this section shall be laid before Parliament within three weeks after they are made if Parliament is then sitting, and if Parliament is not sitting, within three weeks after the beginning of the next session of Parliament, and shall be judicially noticed, and shall have effect as if enacted by this Act, and shall be published under the authority of Her Majesty's Stationery Office.

(3.) Nothing in this Act shall affect the power of any person or authority to undertake prosecutions otherwise than under the said regulations.

The Shop Hours Act, 1892.—This Act defines "shop," as far as the Act is concerned, as any shop, either wholesale or retail, market, stall, or warehouse, in which assistants are employed for hire. It applies particularly to young persons under the age of 18 years.

No young person shall be employed in or about a shop for a longer period than 74 hours, including meal times, in any one week.

No young person shall, to the knowledge of his employer, be employed in or about a shop, having been previously on the same day employed in any factory or workshop, as defined by the Factory and Workshop Act, 1878, for the number of hours permitted by the said Act, or for a longer period than will (together with the

time during which he has been so previously employed) complete such number of hours.

In every shop in which a young person is employed a notice shall be kept exhibited by the employer in a conspicuous place referring to the provisions of this Act, and stating the number of hours in the week during which a young person may lawfully be employed in that shop.

Where any young person is employed in or about a shop contrary to the provisions of this Act, the employer shall be liable to a fine not exceeding one pound for each person so employed.

Where the employer of any young person is charged with an offence against this Act, he shall be entitled, upon information duly laid by him, to have any other person whom he charges as the actual offender brought before the court at the time appointed for hearing the charge, and if, after the commission of the offence has been proved, the said employer proves to the satisfaction of the court that he has used due diligence to enforce the execution of the Act, and that the said other person has committed the offence in question without his knowledge, consent, or connivance, the said other person shall be summarily convicted of such offence, and the occupier shall be exempt from any fine.

All offences under this Act shall be prosecuted, and all fines under this Act shall be recovered, in like manner as offences and fines are prosecuted and recovered under the Factory and Workshops Act, 1878, and Sections 88, 89, 90, and 91 of the said Act, and so much of Section 92 thereof as relates to evidence respecting the age of any person, and the provisions relating to the application of the said Act to Scotland and Ireland, so far as those provisions are applicable, shall have effect as if re-enacted in this Act and in terms made applicable thereto.

The council of any county or borough, and in the city of London the common council, may appoint such inspectors as they think necessary for the execution of this Act within the areas of their respective jurisdictions, and Sections 68 and 70 of the Factory and Workshop Act, 1878, shall apply in the case of any such inspector as if he were appointed under that Act, and as if the expression workshop (as used in those sections) included any shop within the meaning of this Act.

The powers conferred by this section may be exercised in Ireland by the council of any municipal borough and by the commissioners of any town or township.

Nothing in this Act shall apply to a shop where the only persons employed are members of the same family, dwelling in the building of which the shop forms part or to which the shop is attached, or to members of the employer's family so dwelling, or to any person wholly employed as a domestic servant.

Truck Act, 1896.—By this Act it is illegal to impose fines on assistants unless certain formalities are observed, and the following are the sections that are of interest to our readers:—

1.—(1.) An employer shall not make any contract with any workman for any deduction from the sum contracted to be paid by the employer to the workman, or for any payment to the employer by the workman, for or in respect of any fine, unless—

(a) the terms of the contract are contained in a notice kept constantly affixed at such place or places open to the workmen, and in such a position that it may be easily seen, read, and copied by any person whom it affects; or the contract is in writing, signed by the workman; and

(b) the contract specifies the acts or omissions in respect of which the fine may be imposed, and the amount of the fine or the particulars from which that amount may be ascertained; and

(c) the fine imposed under the contract is in respect of some act or omission which causes or is

likely to cause damage or loss to the employer, or interruption or hindrance to his business; and

(d) the amount of the fine is fair and reasonable having regard to all the circumstances of the case.

(2). An employer shall not make any such deduction or receive any such payment, unless—

(a) the deduction or payment is made in pursuance of, or in accordance with, such a contract as aforesaid; and

(b) particulars in writing showing the acts or omissions in respect of which the fine is imposed and the amount thereof are supplied to the workman on each occasion when a deduction or payment is made.

(3.) This section shall apply to the case of a shop assistant in like manner as it applies to the case of a workman.

4. If any employer enters into any contract contrary to this Act, or makes any deduction or receives any payment contrary to this Act, he shall be guilty of an offence against the Truck Act, 1831, and shall be liable to the penalties imposed by section nine of that Act as if the offence were an offence in that section mentioned.

5. Any workman or shop assistant may recover any sum deducted by or paid to his employer contrary to this Act, provided that proceedings for such recovery are commenced within six months from the date of the deduction or payment sought to be recovered, and that where he has consented to or acquiesced in any such deduction or payment, he shall only recover the excess which has been deducted or paid over the amount, if any, which the court may find to have been fair and reasonable, having regard to all the circumstances of the case.

6.—(1.) Every employer who has made any contract purporting or intending to operate as a contract under this Act, shall, on demand in writing by one of Her Majesty's inspectors of factories or of mines, produce the contract or a true copy thereof at any convenient time and place to be named by the inspector, and the inspector shall be at liberty to take a copy of the same or of any part thereof, and the employer of any workmen or shop assistant who is party to any such contract shall at the time of making the contract give the workman or shop assistant a copy of the contract or of the notice containing its terms.

(2.) A workman or shop assistant who is party to any such contract shall be entitled, on request, to obtain from his employer free of charge a copy of the contract or of the notice containing its terms.

(3.) Every employer who has made any contract purporting or intending to operate as a contract under section one of this Act shall keep a register of deductions or payments, and shall enter therein every deduction or payment for or in respect of any fine purporting to be made under any such contract, specifying the amount and the nature of the act or omission in respect of which the fine was imposed, and this register shall be at all times open to inspection by one of Her Majesty's Inspectors of Factories or of Mines.

(4.) If any person fails to comply with this section he shall be liable on summary conviction to a fine not exceeding forty shillings.

7. A contract entered into under the provisions of this Act shall not be liable to stamp duty.

9.—(1.) The Secretary of State, if satisfied that the provisions of this Act are unnecessary for the protection of the workmen employed in any trade or business, or in any branch or department of any trade or business, either generally or within any specified area, may by order under his hand grant an exemption from those provisions in respect of the persons engaged in that

trade, business, branch, or department, either generally or within that area.

(2.) The Secretary of State may at any time amend or revoke any such order.

(3.) Every order made under this section shall be laid as soon as may be before both Houses of Parliament, and if either House within the next forty days after the order has been so laid before that House resolves that the order ought to be annulled, the order shall, after the date of that resolution, be of no effect, without prejudice to the validity of anything done in the meantime under the order or to the making of a new order.

Seats for Shop Assistants Act, 1899.—In all rooms of a shop, or other premises where goods are actually retailed to the public, and where female assistants are employed for the retailing of goods to the public, the employer carrying on business in such premises shall provide seats behind the counter, or in such other position as may be suitable for the purpose, and such seats shall be in the proportion of not less than one seat to every three female assistants employed in each room.

2. Any person failing to comply with the provisions of this Act shall be liable, on summary conviction, for a first offence to a fine not exceeding three pounds, and for a second or subsequent offence to a fine not less than one pound and not exceeding five pounds.

3. This Act shall come into force on the first day of January one thousand nine hundred.

4. This Act shall be read and construed as one with the Shop Hours Acts, 1892 to 1895.

SUGAR DUTIES: Regulations, 1901. —Import duties on Sugar, etc., chargeable on and after April 19, 1901, viz.:—

1. Sugar of a polarization exceeding 98 deg. the cwt. -	4 2
Sugar of a polarization not exceeding 76 deg. the cwt. - and intermediate duties varying between 4s. 2d. and 2s. on Sugar of a polarization not exceeding 98 deg., but exceeding 76 deg., in accordance with Table annexed.	2 0
Molasses (except when cleared for use by a licensed distiller in the manufacture of Spirits), and invert Sugar and all other Sugar and extracts from Sugar which cannot be completely tested by the polariscope and on which Duty is not specially charged—	
If containing 70 per cent. or more of sweetening matter the cwt.	2 9
If containing less than 70 per cent. and more than 50 per cent. of sweetening matter the cwt.	2 0
If containing not more than 50 per cent. of sweetening matter - - - the cwt.	1 0
Glucose—	
Solid - - - - the cwt.	2 9
Liquid - - - - the cwt.	2 0
Saccharin (including substances of a like nature or use) the oz.	1 3
Sugar Candy will be dealt as sugar polarizing over 98 deg.	

N.B.—The Duties on Molasses and Glucose cleared on or before June 11, 1901, are deemed to be chargeable at the rates fixed in the Resolution of April 18, 1901, which formed the subject of General Order 33-1901.

2. The exemption under the Schedule to the Customs Tariff Act, 1876, from the Duty on Plums, of Plums preserved in Sugar, is to cease, and Plums (including Greengages) preserved in Sugar or otherwise are to be charged at 7s. per cwt. (Tinned and bottled Apricots in syrup or water and Apricot Pulp are not liable to Duty as preserved Plums). Duty, however, must be charged on any added sugar. Dried Apricots are to

be charged 7s. per cwt. See Appendix F. The Duty of 7s. a cwt. on Figs is equally applicable to Tinned Figs and Fig Pulp, and is to be levied accordingly.)

3. The fixed rates of duty set out in Appendix F are, on receipt of this Order, to be charged on the several articles as specified therein and the concessions in General Orders 35-1901, 36-1901, and 37-1901 are no longer to be applied to such articles. Samples of the articles referred to will not be required. This Schedule will be added to from time to time as occasion arises.

4. Samples of Sugar and Molasses and of all manufactured or prepared goods in which sugar is an ingredient except those included in the Schedule annexed, Appendix F, are to be sent for test or analysis as hereafter directed, and Duty will be charged thereon according to the rating shown on the Testing Form. Delivery may be allowed to proceed at once on the Importer depositing a sufficient sum to cover the Duty. With the Board's permission merchants may clear sugar on payment of Duty on an estimated polarization, also syrups and molasses, at an estimated percentage on entering into a bond in a sufficient amount to cover any short payment arising from the weight or rating having been understated.

5. If Importers elect to pay the maximum Duty leviable, sampling may be dispensed with.

6. Sugars and other articles specified must be duly entered by Prime or Warehousing Entry according to the headings in the Import List, but they may, in accordance with usual regulations, be entered by Bill of Sight or other Imperfect Entry in the first instance, or for transhipment.

7. The goods are to be brought to account by weighing either on the import ship, on a lighter alongside, at an approved place of landing, or at a Bonded Warehouse in the same Port to which they may be removed (in charge or otherwise) at the discretion of the Surveyor, direct from the ship. Any of the articles specified above, except Saccharin, may be removed from ship's side without actual warehousing at the port of landing to a Customs or Excise warehouse under the conditions of paragraph 202 of the Code. Samples for test or analysis are to be drawn at the option of the Importer, either at the Port of landing or at the Warehouse of Destination. A statement of the course adopted should be endorsed on the entry or despatch. If not removed in locked vans the proportion to be weighed gross, before removal, will be as specified in paragraphs 8 and 9 of this General Order. The necessary beams, weights, and scales, or approved weighing machines, are to be provided by the Importer.

8. At the request of the Importer, however, weighing by the Customs may be dispensed with and the weights furnished by the Dock Companies, Master Porters, or other independent authorities may be accepted, subject to a test check of 2 per cent., provided that the Surveyor is satisfied with this maximum and that an undertaking is given by the Importer to furnish with all despatch the gross weights, tares, and net weights of each parcel of the same mark, description, and quality, or of each package or lot which may be required for separate delivery.

9. In cases where the goods are not weighed under the foregoing regulation an average weight for Duty may, on the request of the Importer, be taken by weighing not less than 5 per cent. of the total number of packages in each parcel of the same mark, description and quality. The Surveyor must satisfy himself that the operation can be performed with fairness to the trade and without loss to the Revenue.

10. Where Sugar, Molasses, or Glucose, or goods containing such in-

gredients are imported and entered in packages of even net weights, the entry, if endorsed by the merchant, may be accepted subject to a test weighing as follows: Not exceeding 100 packages, 3, exceeding 100 and not exceeding 300 packages 5, exceeding 300 packages 7.

In importations of large quantities a few more may be weighed at the discretion of the Surveyor.

11. When importers endorse their entries showing the net weights of packages of Sugar, and produce to the Collector invoices with statements to his satisfaction that the weights given have been checked and accepted by foreign Customs Authorities, the Collector may give authority for Surveyors to exercise their discretion in dispensing with test weighing of parcels, in respect of which they satisfy themselves that such a course can be followed without risk to the Revenue. In the instance of Sugar entered at 4s. 2d. per cwt. Refiners' invoices with relative Bills of Lading may be accepted by Collectors subject to occasional test check of the weights at the Surveyor's discretion.

12. Sugar, Molasses, Glucose, and goods containing sugar are to be weighed to the pound (no objection need be made to the weights furnished by independent authorities under Regulation 8 although taken to the ½lb.), a satisfactory tare being arrived at by the Surveyor in agreement with the Importer. Net weights may be taken if desired by the Importer.

13. Saccharin (including substances of a like nature or use, such as Saxin, etc.), is to be weighed to the ounce, tared to the ¼-ounce, and charged to the ounce. Thus, 1 tin—19lb. 19 oz. gross, tare 6¼ oz.—19 lb. 2 oz. for account. It can only be imported at London, Harwich, Dover, Folkestone, Newhaven, and Southampton, and must be packed in packages of not less than 1lb. net weight. Its importation by the Foreign and Colonial Parcel Post is forbidden. It may, however, be repacked in Bonded Warehouses into packages containing not less than 1lb. Saccharin each for exportation (exportation of Saccharin may take place by Parcel Post within the prescribed limits as to weight. G.O. 64/1901) under ordinary Bond.

14. In cases where Sugar is entered to be tested and the merchant draws a sample from each package or draft and bulks the whole for a representative sample of the same mark, description and quality, for trade purposes, a sample of not less than ½ lb. weight should be taken from the same bulk for revenue purposes, provided that the Officer is satisfied that such bulk has been fairly made up.

15 (a) Where merchants do not themselves sample the goods the Surveyor, in consultation with the Importer or his representative, will take samples of even weight as follows from each parcel of the same mark, description and quality: Not exceeding 100 packages, 7 samples, exceeding 100 packages and not exceeding 300 11, exceeding 300 15.

(b) In importations of large quantities additional Samples may be taken at the discretion of the Surveyor. In importations of small quantities fewer samples may be taken.

(c) These samples are to be bulked and a representative sample of ½-lb. weight is to be forwarded to the nearest Testing Office, the remainder of the bulk being returned to the Importer.

16. The samples are to be forwarded in bottles labelled as per specimen shown in Appendix C, and accompanied by a testing form (see Appendix D). The bottles are to be enclosed in envelopes, duly sealed, and packed in boxes. The proper bottles, labels, envelopes, and boxes are to be obtained by application to Division 2 of the Secretary's Office in the usual manner.

17. Sugar will be tested at the following Ports: London, Liverpool,

Glasgow, Bristol, Hull, Leith, Southampton, Greenock, Grangemouth. But where local arrangements have not yet been completed, samples of Sugar are to be forwarded to the Laboratory, Custom House, London.

18. In London the Office Inspector, and at the Outports where Sugar is tested the Collectors, will, each week, select six samples from those already tested, and forward them to the Laboratory, Custom House, London, for check, together with a copy of the testing form.

19. When an Importer produces a Foreign Certificate stating the polariscopic indication of the parcels of Sugar, and the Collector is satisfied as to the authenticity of the Certificate, Duty may be accepted on the percentage of Sugar corresponding to that indication, as shown in Table (Appendix A), without waiting for the result of the test. The production of the Certificate is to be noted upon the entry. If on receipt of the testing form the polariscopic indication shown thereon is found to differ by more than one degree from that given on the Certificate produced by the Importer, the matter is to be reported to the Board.

20. Until further Orders samples of goods containing Sugar (including Molasses and Glucose), or goods in the manufacture or preservation of which Sugar is used—except such goods as are included in the Schedule F annexed—are to be forwarded to the Laboratory, Custom House, London, E.C., a testing form being forwarded along with the sample if in London and separately by post if from an Outport.

21. A sample of each description weighing 8oz. is to be drawn and forwarded in the special sample bottle, or if the goods are packed in several bottles, jars, tins, or other receptacles, one of each is to be sent. Only one package in five of each description is to be so sampled, but in large importations a smaller proportion of samples may be taken at the discretion of the Surveyor.

All such samples must bear a label.

22. The chief articles of which Sugar forms a principal part are the following: Biscuits, Caramel, Condensed Milk, Confectionery, Fruits (Crystallised), Fruits and Vegetables preserved in Sugar, in Syrup, Canned or Bottled, Malt Extracts, etc. Preserves—Jams, Jelly, Marmalade, etc.

23. Sugar and other cognate goods mentioned in these Regulations entered under the transhipment regulations, or warehoused for exportation, need not be tested.

24. Sugar and other goods mentioned in these Regulations, except Saccharin, may be sampled by Merchants as in the case of Cocoa and Chicory. See Code paragraphs 133—135, quoted in Appendix B hereto.

25. The duty on Sugar, etc., is chargeable according to the account taken on the landing thereof, subject to the usual regulations as regards accidental damage while in warehouse or during removal under bond.

26. Sugar and other cognate goods mentioned in these Regulations may, pending further directions, be warehoused in any warehouse approved for the deposit of any dry goods, except Tobacco, and subsequently dealt with under the usual regulations.

27. Records and documents in connection with Sugar must show the net weight with description according to the Import List, and, in the case of Sugar tested, the degree of polarisation, or, for other goods, the percentage of Sugar or the rating.

28. The ordinary dry goods or fruit registers, landing books and documents are to be used in connection with the warehousing and delivery of Sugar and other cognate goods mentioned in these Regulations, and the existing Regulations, as far as applicable, governing the warehousing and delivery of low duty dry goods are to

be generally applied. See Appendix E for specimen Records in Warehouse Registers.

29. Sugar of the same mark and description may be bulked prior to the landing account being taken under the conditions laid down in Code paragraphs 438-9.

30. Sugar may be coloured in a bonded warehouse for exportation.

31. Sugar may be delivered from warehouse for the purpose of breaking or crushing for exportation, upon bond being entered into, in the penalty of double the duty payable upon the goods, for the return of the Sugar to the warehouse. A sample must be drawn by the officer prior to the removal of the Sugar for crushing and retained in a sealed bottle until the completion of the operation. On the return of the Sugar into Bond a sample should also be taken and sent for testing. Should any difference in the rate of duty or any loss occur in the process of breaking or crushing, the Board's directions must be sought.

32. Sugar, etc., may be shipped from Bond as Ships' Stores under the usual Regulations according to the following Scale: For each person on board—Sugar or Molasses 4 oz. per day. Condensed Milk 4 oz. per day. Preserves (Marmalade, etc.) 4 oz. per day.

33. When Sugar and Condensed Milk are repacked in Bond for Stores the repacked packages must not contain less than 56 lbs. of Sugar and 7 lb. of Condensed Milk, unless, with reference to the number of the crew and the probable duration of the voyage or other causes, less is required, in which case packages of a smaller size may be allowed.

34. Molasses may be removed, under Bond, direct from the ship's side, constructively warehoused, or from warehouse to distiller's premises free of Duty, for use in the manufacture of spirits. The goods may be removed on invoice weights provided that the Surveyor is satisfied. A despatch with particulars is to be forwarded to the Excise Officer in charge of the distillery, who will forward the usual receipt for the discharge of the Bond. (See Appendix G.)

Attention is drawn to an extract from Inland Revenue Regulations, included in Appendix G, and Officers of Customs are to note for guidance so far as they are concerned.

35. Sugar may be removed under bond to a bonded warehouse for the purpose of sweetening Spirits under the standing Regulations and also to a bonded Cavendish Factory for sweetening Tobacco.

36. Samples of Sugar, imported and entered as such, not exceeding ½-lb. net weight are to be delivered duty free. Samples of goods containing Sugar, Glucose, or Molasses, but not Saccharin, may also be dealt with in the same manner in instances where, to the satisfaction of the Surveyor, the goods are genuine samples.

37. Honey (pure) and Milk Sugar or Lactose are not liable to the Sugar duty, and should not be sampled for testing except in cases of suspicion.

38. General Orders 33-1901 (excepting as regards Coal), 35-1901, 36-1901, 37-1901, 45-1901, 51-1901, 56-1901, 57-1901, and the confidential regulations issued in lithograph, are cancelled.

APPENDIX F.—Schedule of Fixed Rates on the Undermentioned Goods.

Blacking, Solid or Liquid—containing Sugar or any other sweetening matter the cwt.	1	0
Candied and Drained Peel - -	3	0
Caramel, Solid - - - - -	4	2
,, Liquid - - - - -	3	0
Cattle Foods containing Molasses or other sweetening matter - - - - - -	1	0
Cherries, Drained, imported in bulk - - - - - -	2	3
Chutney - - - - - - -	2	0
Cocoanut, sugared - - - -	2	0
Confectionery containing Chocolate, viz.:		
When the Chocolate exceeds		

50 per cent. of the total net weight - - - - the lb.	0	2
When the Chocolate does not exceed 50 per cent. of the total net weight - - -	0	1½

Note.—Surveyors, if satisfied, are allowed discretionary power to accept the importer's statement that the chocolate in confectionery containing chocolate does not exceed .50 per cent.]

Confectionery made from Sugar and containing no other ingredients except flavouring the cwt.	4	2
Confectionery, Hard, such as: Carraway Seeds, etc. - -	4	2
Confectionery, Soft, such as: A. B. Gums, Chewing Gums, Jelly Beans, Turkish Delight, etc. - - - - - - -	3	0
Flowers, as Violets and Rose Petals, etc., in Crystallized Sugar, as Crystallized Fruit	4	2
Fruit, canned and bottled, other than fruit liable to duty as such, preserved in Syrup - - - - - - -	1	0
Fruits Crystallized, Glace, and Metz, except fruit liable to duty as such - - - - -	4	2
Fruits, Imitation, Crystallized (Orange and Lemon Slices, etc.)	4	2
Fruit, except currants, liable to duty as such, preserved in Sugar, or otherwise, whether mixed with other fruits or not - - - - - - - -	7	0
Fruit, Pulp, excepting Fruit Pulp liable to Duty as such, preserved in thin Syrup -	1	0
Fruit, Pulp, excepting Fruit Pulp liable to Duty as such, preserved in thick Syrup, as Jam - - - - - - - -	3	0
Ginger, preserved in Syrup or Sugar - - - - - - -	3	0
Marmalade and Jams, if not made from fruit liable to Duty as such - - the cwt.	3	0
Marzipan - - - - - -	2	6
Milk, condensed, sweetened, whole - - - - - - - -	1	8
Milk, condensed, sweetened, separated or skimmed - -	2	0
Nestle's Milk Food - - -	1	3
Soy, when containing Molasses or other sweetening matter	2	0
Tamarinds, preserved in Syrup	1	0

[Note.—An additional ½d. a lb. is chargeable in respect of any of the before-mentioned articles in which Spirit has been used in the manufacture.]

MILK STANDARD.—New Regulations, 1901.

The Board of Agriculture, in exercise of the powers conferred on them by Section 4 of the Sale of Food and Drugs Act, 1899, made the following regulations, dated August 5th, 1901. 1. Where a sample of milk (not being milk sold as skimmed, or separated, or condensed milk) contains less than 3 per cent. of milk-fat, it shall be presumed, for the purposes of the Sale of Food and Drugs Acts, 1875 to 1899, until the contrary is proved, that the milk is not genuine, by reason of the abstraction therefrom of milk-fat, or the addition thereto of water. 2. Where a sample of milk (not being milk sold as skimmed, or separated, or condensed milk) contains less than 8.5 per cent. of milk-solids other than milk-fat, it shall be presumed, for the purposes of the Sale of Food and Drugs Acts, 1875 to 1899, until the contrary is proved, that the milk is not genuine, by reason of the abstraction therefrom of milk-solids other than milk-fat, or the addition thereto of water. 3. Where a sample of skimmed or separated milk (not being condensed milk) contains less than 9 per cent. of milk solids, it shall be presumed, for the purposes of the Sale of Food and Drugs Act, 1875 to 1899, until the contrary is proved, that the milk is not genuine, by reason of the abstraction therefrom of milk solids other than milk-fat, or the addition thereto of water.

These regulations came into operation on the 1st day September, 1901.

ADDENDA.

Horse Keeping.—A tradesman's horse needs daily about9 lbs. crushed oats, 4 lbs. crushed maize, 6 lbs. bran, and 6 lbs. chopped hay, fresh damped with water, and given: 9 lbs. in morning, 6 lbs at midday, and 10 lbs. at night.

The London Bus Company allows: 16 lbs. crushed oats, 7½ lbs cut hay, and 2½ lbs. cut straw.

A weekly treat for a horse is a bran mash, or a couple of swede turnips, or half-a-dozen raw carrots.

Storage of Flour. — A sack of fresh ground flour if kept in a warm place may lose 4 lbs. during 14 days; but although this means a loss to the dealer, it means a gain to the consumer, or baker, for the drier flour merely needs 4 lbs. of water to yield the same weight of bread as the fresh ground flour. N.B.—Putting up and selling flour in bags of toweling is an economy appreciated in many districts.

Herb Powder. — A very saleable mixture is easily made from 1 part (by weight) of sweet marjoram, 1 of winter savoury, 1 of lemon thyme, and 2 of parsley. Dry, pound, sift and bottle. One tea-spoonful is enough to flavour a quart of soup or dressing. The fresh herbs may be bought or ordered at any wholesale vegetable market as in season.

Coffee.—*Caution*—Any retailer storing or selling coffee and chicory from bins, drawers, or canisters marked "Coffee" only, are liable to prosecution under the "Merchandise Marks Act."

Gravy Salt. — *As sold in penny packets.* — Take 1 lb. of caramel (burnt sugar colouring) costing 2d., and mix it with 1 lb. of water; then pour it into an earthenware bowl containing 20 lbs. of ordinary crushed salt, costing 2d.; when rubbed together the mixture will fill 110 penny packets of "Superior Granular Gravy Salt" at a nett cost of 4d.

Poultry Powder.—For fattening, and keeping the birds healthy, producing eggs, and preventing gapes, roup, etc. Mix: 1 part each of carbonate of lime, sublimed sulphur, and sesquioxide of iron; two parts each of powdered licorice root, fennel seed, and sulphate of soda; six parts of sugar of milk, and a half-part of black antimony. One tea-spoonful of above to be mixed in the food for 12 ordinary fowls every morning.

Boiled or Cooked Hams. — To what appears at page 456 it may be added that a good plan is to cook hams in a ten gallon copper, two at a time. Bring them to the boil slowly. When done, take out (hot) and immerse in cold water. They should lose only 6 or 8 ozs. in cooking. It pays best to sell them "boneless."

Old Prunes, Raisins, or Currants.—When dry and rusty, may be made more inviting and saleable by steaming them in a fruit sieve over a copper of boiling water; or, by first rubbing them with a little syrup of sugar or glucose melted in water, and then steaming them for about 20 minutes.

Mouldy Preserves.—Jams, jellies' and marmalades should not be stored in damp corners or cellars, or they may soon go mouldy.

Metal Letters on Glass.—To fix these, mix 6 parts of copal varnish, 2 parts liquid glue, 2 parts of turpentine and 2 parts of linseed oil varnish. Keep the bottle well corked

Glass Letters on Window are easily fixed with a stiff solution of wood naphtha and marine glue.

Canned Fruits, "slack packed," are often half water. Honestly done, the cans should be firmly filled with fruit and finally be filled up with syrup of sugar and water.

SUPPLEMENTARY INDEX

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NEW MEAT EXTRACT LABEL.

AFTER 1ST JANUARY 1900 LIEBIG COMPANY'S EXTRACT WILL BEAR THIS ADDITIONAL LABEL WITH THE COMPANY'S INITIALS LEMCO.
LEMCO

The genuine Liebig Company's Extract is now labelled with the initials of Liebig's Extract of Meat Co. in addition to the blue signature

J. v. Liebig

The new label is intended to assist our clients in distinguishing between the Company's Extract and the many imitations with which the Company has no connection.

Liebig "Company's" Extract.

"No Better Food." Dr. Andrew Wilson. F.R.S.E., &c.

Fry's

PURE CONCENTRATED

Cocoa

275 Gold Medals, &c.

N.B.—Sold only in tins with gilt tops.

WANTED TO PURCHASE

— EMPTY —

"VENESTA" TEA CHESTS.

We are open to purchase any empty Venesta Tea Chests at **9**d. each, complete with linings. **6**d. unlined, delivered at our factory,

147, Narrow St., Limehouse, E.,

Carriage paid. (½-chests, **6**d. lined; **4**d. unlined.)

The chests can, if preferred, be sent to us flat by removing the top and bottom, and opening one angle, when the body of the chest will open out flat.

We will collect, within City limits, at 1d. per chest for cartage, Chests returned to London from the country can be sent as empties.

We are prepared to supply small Tea Boxes for the home trade at the following prices free on rails, London :—

Pattern :—No. 70 with Hoop Iron or Tags.			No. 20, with Slide Lids.		No. 40, with Metal Ends.	
Lined.	Foil.	Lead.	Foil.	Lead.	Foil.	Lead.
1-lb.	1½d.	1⅝d.	1⅝d.	2d.	—	—
2-lb.	2¼d.	2⅝d.	2⅝d.	3d.	—	—
3-lb.	3d.	3½d.	4d.	4½d.	—	—
5-lb.	4d.	5d.	5d.	5½d.	—	—
6-lb.	4½d.	5½d.	5½d.	6d.	—	—
7-lb.	5d.	6d.	6d.	6½d.	—	—
10-lb.	6d.	7d.	6½d.	7½d.	—	—
12-lb.	6½d.	7½d.	7d.	8d.	—	—
14-lb.	7d.	8d.	8d.	9d.	—	—
20-lb.	8d.	9d.	9d.	10d.	9d.	10d.
25-lb.	9d.	10½d.	10d.	1/0	11d.	1/0
30-lb.	11d.	1/1	1/0	1/2	1/0	1/2
40-lb.	1/0	1/3	1/2	1/4	1/2	1/4
50-lb.	1/3	1/7	1/5	1/8	—	—
60-lb.	1/6	1/10	1/8	2/0	—	—

VENESTA, LIMITED,

OFFICES: 20, EASTCHEAP, LONDON. E.C.

"ALL BLUFF"

Exclaims the reader of the many rosy advertisements put before him. And the reader is often right. We will therefore merely state the fact that these Powders are pronounced

The PUREST,

STRONGEST,

and BEST,

by the very highest authorities of **to-day** among Baking Experts, Analysts, Doctors, Professional Cooks, &c.

Every retailer that means to sell

THE BEST

should try them, or get his wife to try them.

—:—

Got up in superior style and sold in penny packets; also 6d., 1/- and 2/- tins.

—:—

So confident are we of the quality that we will send £2 worth, carriage paid, also enclose 6 dozen free sample tins and booklets with your name on for distribution, and agree to take back and allow money in full, if they do not give greater satisfaction than any kind your customers have had previously

—:—

Kindly consider this offer and write us for Price List, mentioning Law's "Grocer's Manual."

Manufacturers:

The EASTELEINE Co.,

NEWBURY, BERKS.

THE BERKSHIRE
REGISTERED
ELECT
TRADE
MARK
CAKE POWDER
THE PERFECTION OF EGG POWDER.
A VALUABLE AND REAL SUBSTITUTE FOR EGGS.
THIS ARTICLE WILL BE FOUND A BOON TO EVERY HOUSEKEEPER FOR MAKING BEAUTIFULLY LIGHT CAKES AND PUDDINGS WITHOUT EGGS AND WITH LESS BUTTER AND IS GUARANTEED TO GIVE THE SAME FLAVOUR AND COLOUR AS WHEN EGGS ARE USED
MANUFACTURED BY
THE EASTELEINE COMPY.
NEWBURY.

QUALITY SELLS!

For BEST PINE APPLES

and DELICIOUS CHUNKS

IN SYRUP,

Grocers should obtain The SINGAPORE PLANTING and PACKING Co.'s

'Sultan Brand.'

The Pine Apples of Singapore are noted for their excellent flavour, and all Fruits packed by us are carefully selected when in the finest condition, we therefore invite particular attention to our "Sultan Brand."

WORKS AND OFFICES:—**Singapore, East Indies.**

E. MITCHELL & SONS, 5, BURNETT PLACE, BRADFORD.

Sole Makers of TRADE "EASY MARY." MARK.

METAL POLISH,

FURNITURE CREAM, STICK FAST, and TAN POLISH FOR BOOTS.
Wholesale and Retail.
Special Quotation for Quantities.

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Established to promote the welfare and protect the interests of those employed in the Grocery and Provision Trades, seeks to secure shorter hours of labour and improved conditions of employments. Branches in London, Liverpool, Manchester, Hastings, Brighton, and other towns; also an **Employment Bureau.**

Entrance Fee, 1/-; Annual Subscription, 5/-.

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SECRETARY: MR. J. AUBREY REES.

It publishes an Official Organ monthly, entitled "*The Grocer's Assistant*," Price **1d.**

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Established, 1857.

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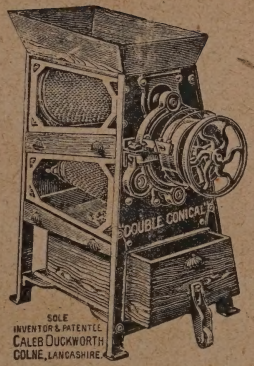
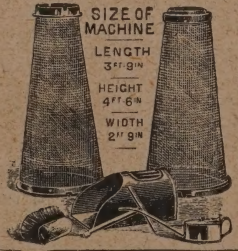
DRY FRUIT CLEANING MACHINES.

Entirely different from and much superior to all others.





THE "DOUBLE CONICAL"

will thoroughly clean by

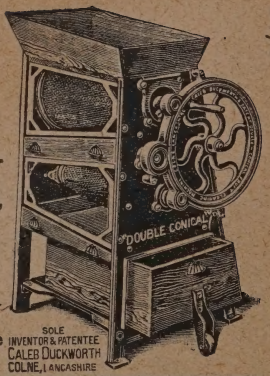
HAND-POWER, ABOUT 5-lbs. PER MINUTE,

and if fitted for

STEAM-POWER, 10-lbs. PER MINUTE.

The Original and only Machines with Horizontal Motion, Rotating Sieves, and Reversible Rubber Fans.

Accessories supplied with every Machine (including Currant and Sultana Cylinders).



THE "CONICAL" (Steam Power)

WILL THOROUGHLY CLEAN

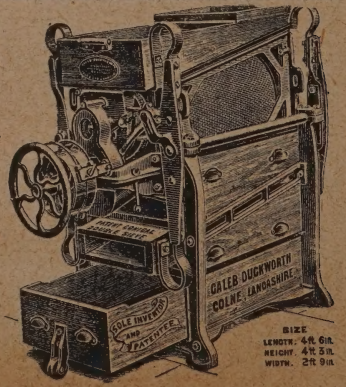
ABOUT 40-lbs. PER MINUTE.

The Conical Sieves and Fans rotate horizontally in opposite directions without crushing the fruit. The process of cleaning greatly improves the bloom, retains the flavour, and takes out over 99 per cent. of the small stems, etc.; the loss of weight by cleaning being under one per cent.

Every Machine guaranteed for 12 Months, and to do the work advertised.

For full Particulars, apply to the SOLE INVENTOR AND PATENTEE,

Caleb Duckworth, Colne, Lancs.



ENAMELINE

THE MODERN

STOVE POLISH.

GUARANTEED TO THE TRADE & CONSUMER.

FOR

GENUINE PURE CANE

GOLDEN SYRUP

(In all sorts of Packages)

APPLY TO

GRAHAM, SON, & HAY,

16, STANLEY STREET,

TELEPHONE, 471. LIVERPOOL.

A NEW LINE ON WHICH YOU CAN MAKE MONEY.

"LA FLOR DE BRANDIGAS."

The FINEST BORNEO CIGARS in the MARKET.

These Cigars are of Choice Flavour and have all the finish and appearance of Havana Cigars costing double the price.

	In 50's.
Princesas	10/6 per 100.
Bouquets	13/6 ,,
Perfectos	15/6 ,,
Cabinets	16/6 ,,
Non Plus Ultra	17/6 ,,

(Also supplied in boxes of 25 at 1/- per 100 extra.)

SAMPLE BOXES CAN BE HAD AT PROPORTIONATE PRICES.

VALUE IN 2D. CIGARS.

	In Boxes of	Price per 100.
Java Conchas	50	10/-

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BOTOLPH HOUSE, EASTCHEAP, E.C.

THE GENERAL SHIPPING COMPANY, LIMITED,

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DAY & MARTIN,

LIMITED.

LONDON and LIVERPOOL.

SOLE MANUFACTURERS and PROPRIETORS

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Real Japan Liquid Blacking.

BY ROYAL WARRANT TO

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CONTRACTORS TO THE ARMY AND NAVY.

Paste Blacking in Tins & Skins.
Russet Cream.
„ Paste.
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Patent-Leather Varnish.
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Furniture Polish.
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DAY & MARTIN, Limited,

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'REX' 'REX'

CORNED BEEF

is perfect in flavour, and retains all the natural strengthening juices of the meat. It is free from excess of fat or gristle. It does not crumble in cutting.

LUNCH TONGUES

One of the greatest delicacies of the day. Nothing to equal them.
Perfection in colour. . . .
. . . Delicious and appetizing.

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ARE SUPERB QUALITY.

Once tried, buyers will have no other brand.

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GOLD MEDAL

CHERRY BRANDY

(KIRSEBÆR LIQUEUR.)

"There is something in the success of this particular Liqueur which pleases one. To have distanced the whole world in the production of so homely and familiar a cordial—for Cherry Brandy is made the whole world over, though nowhere so well as in Copenhagen—is a sort of universal triumph; and conspicuous success of this kind will be found to be rare and invariably well deserved." — Extract from the *Wine and Spirit Traaes' Combined Circulars*, July, 1894.

Purveyor by Appointment to the Royal Danish and Imperial Russian Courts and H.M. King Edward VII.

Sold by all respectable Wine Merchants throughout the World.

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SADLER'S
MARVELLOUS
CARPET SOAP,

4½d. and 8d. per bar. HAS 12 YEARS' REPUTATION.
Sample Box for 7/- sells for 10/-,
From your Agents or the Depôt:
160, NORTH STREET, BRIGHTON.

J. JACKSON, *Tea Expert*, 16, BRIDGE STREET, CHESTER.

Winner of GOLD MEDALS at Manchester Grocery Competitions, 1898 and 1899, for Tea Matching and Tea Valuing.

Teas Liquored, Judged, and Returned within 24 hours. Fee, 5/- per sample.

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Rope, Line, and Twine Manufacturers,

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Guaranteed Pure Genuine HOME-MADE

PICKLES

All the Vegetables are GROWN on the Makers' FARMS in BEDFORDSHIRE.

SAUCES

Appetising, Piquant, and Digestive.

Proprietors: ALLEN JEEVES & SONS,

Manufactory: SEDDINGTON, SANDY, BEDS

The "Original" Bath Oliver Biscuits.

(As supplied to Grand Pump Room Hotel.)

Established 1735.

Established 1735.

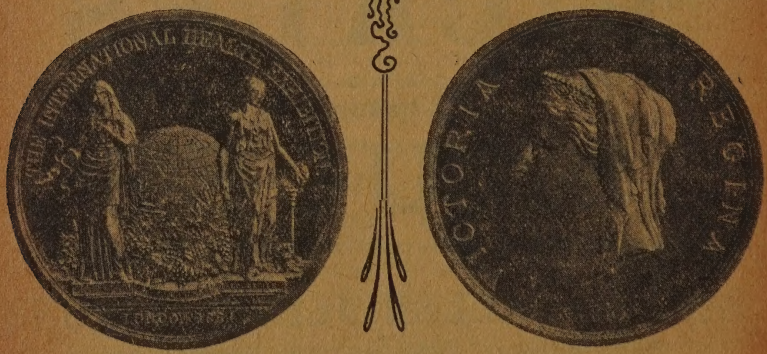
Manufactured only by

JAMES FORTT, 13, Green Street, Bath.

CAUTION.—Each tin of the **"Original"** Bath Oliver Biscuits bears the registered Trade Mark as above; the Public are specially warned against **cheap and worthless imitations** placed on the market by unscrupulous makers of so-called Oliver Biscuits.

To be procured of all Grocers throughout the world, and of the Wholesale and Export Agents: E. LAZENBY & SON, Ltd., and CROSSE & BLACKWELL, Ltd.

Telephone No. 183. Telegraphic Address: "Biscuits, Bath."



EPPS'S COCOA.

GOOD PROFITS AT FIXED PRICES,

WITH BONUS.

The WORLD looks on and LAUGHS and drinks its

EPPS'S COCOA

just the same.

WHY?

Because it has been pronounced — by the World's best judges — GRATEFUL & COMFORTING not for a day but for a lifetime. It is the World's standard of EXCELLENCE and nothing can alter it.

EPPS'S COCOA ESSENCE

GOOD PROFITS AT FIXED PRICES,

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LAW'S GROCER'S MANUAL